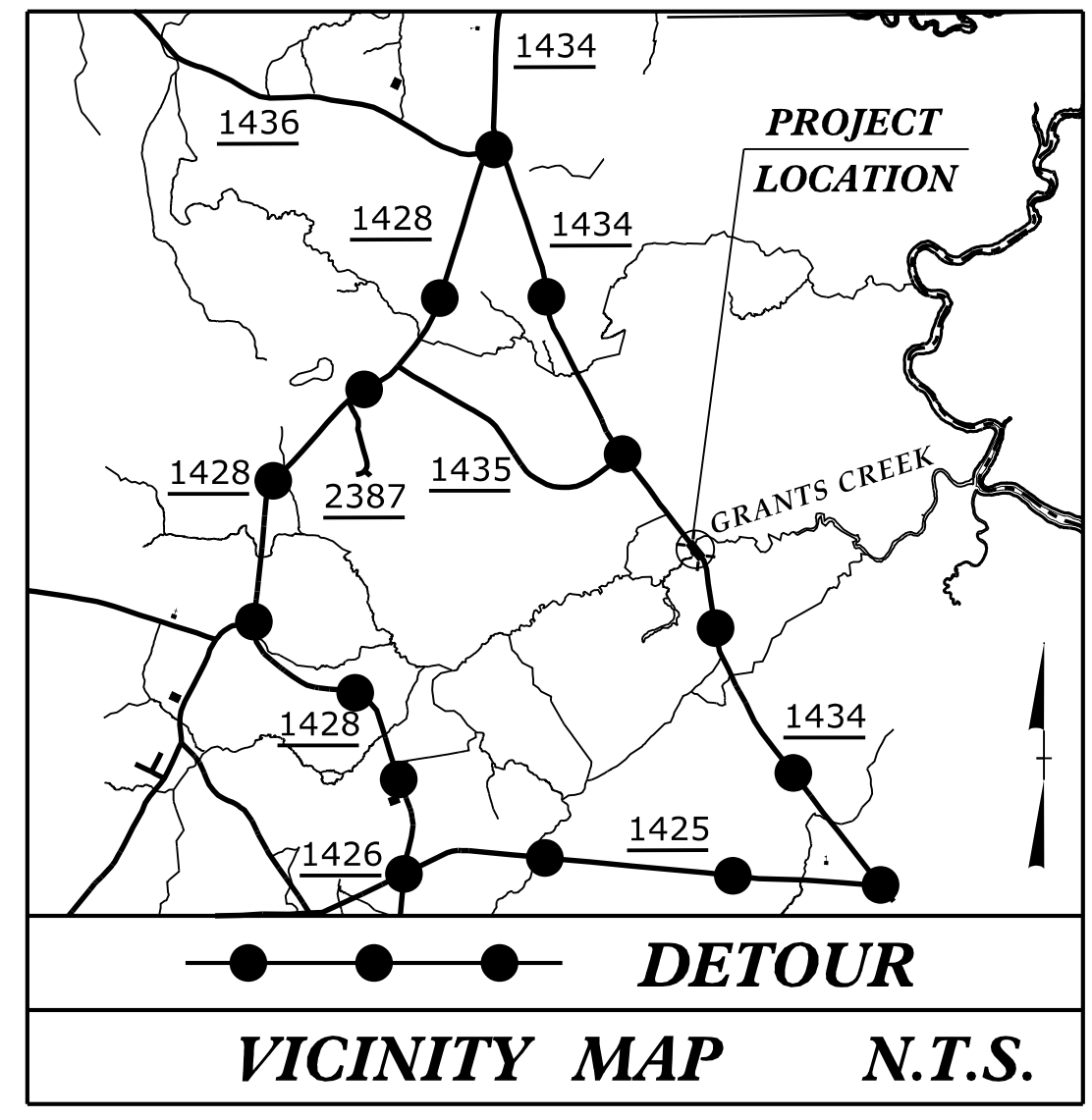


09_08/2018

WBS: 17BP.3.R.55

CONTRACT: DC00208

See Sheet 1A For Index of Sheets
See Sheet 1B For Conventional Symbols



100% PLANS

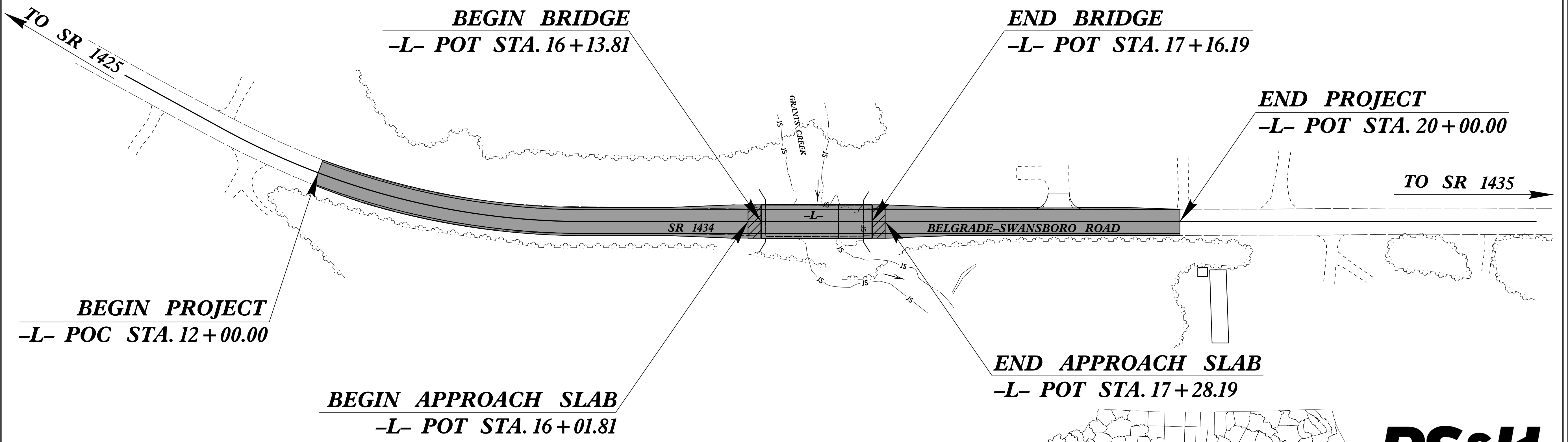
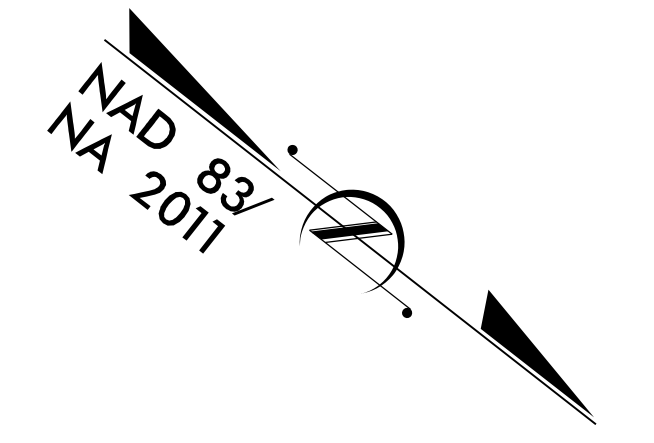
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

ONSLOW COUNTY

**LOCATION: BRIDGE NO.13 OVER GRANTS CREEK
ON SR 1434 (BELGRADE-SWANSBORO ROAD)**

TYPE OF WORK: GRADING, DRAINAGE, PAVING AND STRUCTURE (BRIDGE)

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	17BP.3.R.55	1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
17BP.3.R.55	N/A	PE	
17BP.3.R.55	N/A	ROW, UTL.	
17BP.3.R.55	N/A	CONST.	



BEGIN PROJECT
-L- POC STA. 12+00.00

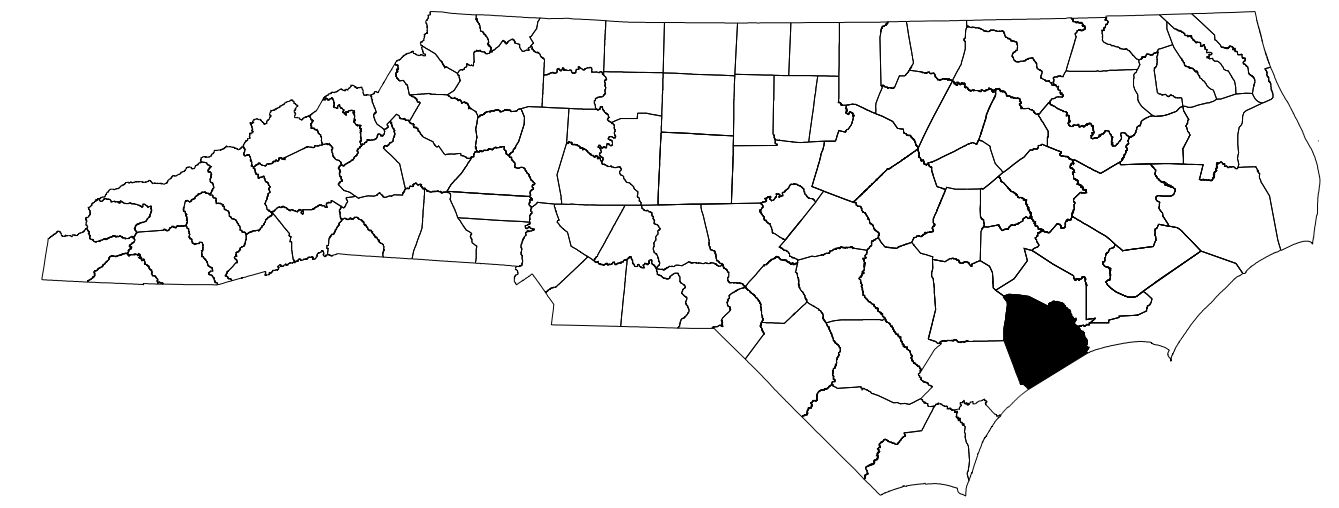
BEGIN BRIDGE
-L- POT STA. 16+13.81

BEGIN APPROACH SLAB
-L- POT STA. 16+01.81

END BRIDGE
-L- POT STA. 17+16.19

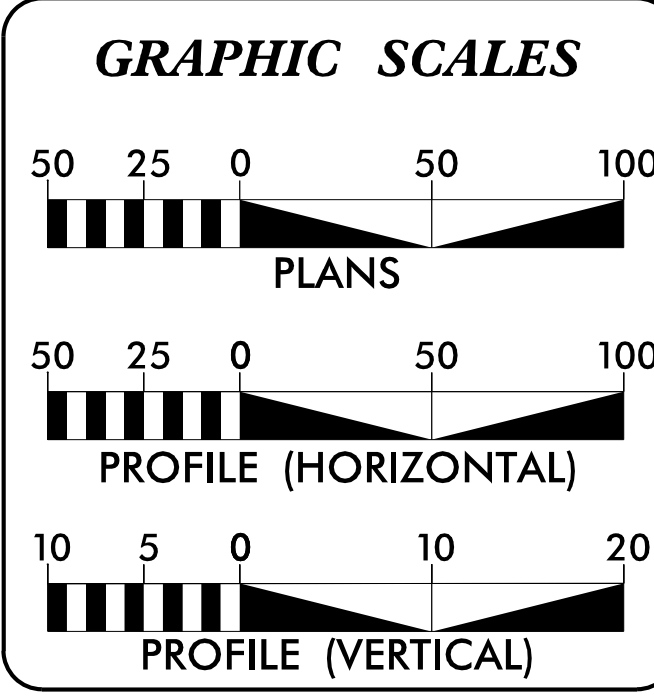
END APPROACH SLAB
-L- POT STA. 17+28.19

END PROJECT
-L- POT STA. 20+00.00



THERE IS NO CONTROL OF ACCESS ON THIS PROJECT.

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED



DESIGN DATA
ADT 2013 = 2300

T = 7 %
V = 55 MPH

FUNC CLASS =
COLLECTOR
SUBREGIONAL TIER

PROJECT LENGTH

LENGTH ROADWAY = 0.133 MILES
LENGTH STRUCTURE = 0.019 MILES
TOTAL LENGTH = 0.152 MILES

Prepared in the Office of:
RS&H
ARCHITECTS-ENGINEERS-PLANNERS, INC.
8521 SIX FORKS ROAD, SUITE 400
RALEIGH, NC 27615

2018 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
OCTOBER 2, 2017

LETTING DATE:
JUNE 21, 2018

RICHARD BOLLINGER, PE
PROJECT ENGINEER

CHARLES YOUNG, PE
PROJECT DESIGN ENGINEER

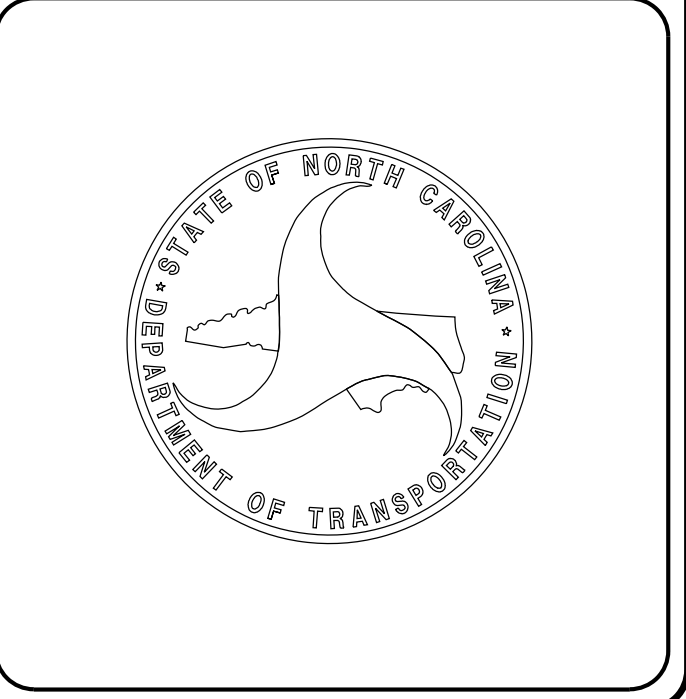
AL EDGERTON
NCDOT CONTACT

HYDRAULICS ENGINEER

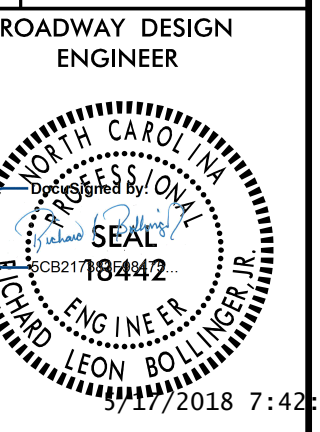
4/27/2018 P.E.

ROADWAY DESIGN ENGINEER

4/27/2018 P.E.



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**DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED**

INDEX OF SHEETS

SHEET NUMBER	SHEET
1	TITLE SHEET
1A	INDEX OF SHEETS, GENERAL NOTES, AND LIST OF STANDARD DRAWINGS
1B	CONVENTIONAL SYMBOLS
1C	SURVEY CONTROL SHEET
1D	PROPOSED ALIGNMENT CONTROL SHEET
1E	RIGHT OF WAY CONTROL SHEET
2A-1	PAVEMENT SCHEDULE, TYPICAL SECTIONS
2B-1	MODIFIED METHOD III CLEARING DETAIL
3B-1	SUMMARY OF DRAINAGE QUANTITIES SUMMARY OF GUARDRAIL, EARTHWORK SUMMARY, ASPHALT PAVEMENT REMOVAL, AND SHOULDER BERM GUTTER SUMMARY
4	PLAN SHEET
5	PROFILE SHEET
TMP-1 THRU TMP-3	TRANSPORTATION MANAGEMENT PLANS
PMP-1 THRU PMP-2	PAVEMENT MARKING PLANS
EC-1 THRU EC-5	EROSION CONTROL PLANS
UC-1 THRU UC-4	UTILITY CONSTRUCTION PLANS
UO-1 THRU UO-2	UTILITIES BY OTHERS
X-1A	CROSS-SECTION SUMMARY SHEET
X-1 THRU X-5	CROSS-SECTIONS
S-1 THRU S-19	STRUCTURE PLANS
SN	STRUCTURE STANDARD NOTES SHEET

GENERAL NOTES

**GRADE LINE:
GRADING AND SURFACING:**
THE GRADE LINES SHOWN DENOTE THE FINISHED ELEVATION OF THE PROPOSED SURFACING AT GRADE POINTS SHOWN ON THE TYPICAL SECTIONS. GRADE LINES MAY BE ADJUSTED AT THEIR BEGINNING AND ENDING AND AT STRUCTURES AS DIRECTED BY THE ENGINEER IN ORDER TO SECURE A PROPER TIE-IN.

CLEARING:
CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY MODIFIED METHOD III.

SUPERELEVATION:
ALL CURVES ON THIS PROJECT SHALL BE SUPERELEVATED IN ACCORDANCE WITH STD. NO. 225.04 USING THE RATE OF SUPERELEVATION AND RUNOFF SHOWN ON THE PLANS. SUPERELEVATION IS TO BE REVOLVED ABOUT THE GRADE POINTS SHOWN ON THE TYPICAL SECTIONS.

SHOULDER CONSTRUCTION:
ASPHALT, EARTH, AND CONCRETE SHOULDER CONSTRUCTION ON THE HIGH SIDE OF SUPERELEVATED CURVES SHALL BE IN ACCORDANCE WITH STD. NO. 560.01.

DRIVEWAYS:
DRIVEWAYS SHALL BE CONSTRUCTED IN ACCORDANCE WITH STD. 848.02 USING 3 FOOT RADII OR RADII AS SHOWN ON THE PLANS. LOCATIONS OF DRIVES WILL BE AS SHOWN ON THE PLANS OR AS DIRECTED BY THE ENGINEER.

GUARDRAIL:
THE GUARDRAIL LOCATIONS SHOWN ON THE PLANS MAY BE ADJUSTED DURING CONSTRUCTION AS DIRECTED BY THE ENGINEER. THE CONTRACTOR SHOULD CONSULT WITH THE ENGINEER PRIOR TO ORDERING GUARDRAIL MATERIAL.

SUBSURFACE PLANS:
NO SUBSURFACE PLANS ARE AVAILABLE ON THIS PROJECT. THE CONTRACTOR SHOULD MAKE HIS OWN INVESTIGATION AS TO THE SUBSURFACE CONDITIONS.

END BENTS:
THE ENGINEER SHALL CHECK THE STRUCTURE END BENT PLANS, DETAILS, AND CROSS-SECTION PRIOR TO SETTING OF THE SLOPE STAKES FOR THE EMBANKMENT OR EXCAVATION APPROACHING A BRIDGE.

UTILITIES:
UTILITY OWNERS ON THIS PROJECT ARE CHARTER AND ONWASA
ANY RELOCATION OF EXISTING UTILITIES WILL BE ACCOMPLISHED BY OTHERS, EXCEPT AS SHOWN ON THE PLANS.

RIGHT-OF-WAY MARKERS:
ALL RIGHT-OF-WAY MARKERS & PERMANENT EASEMENT MARKERS ARE TO BE PLACED BY L&S. THE CONTRACT SURVEYOR WILL BE RESPONSIBLE RESETTING ANY POINTS DISTURBED DURING CONSTRUCTION.

STANDARD DRAWINGS

STD. NO.	TITLE
DIVISION 2 - EARTHWORK	
200.03	Method of Clearing - Modified Method III (Use Detail in Lieu of Standard - See Sheet 2B-1)
225.02	Guide for Grading Subgrade - Secondary and Local
225.04	Method of Obtaining Superelevation - Two Lane Pavement
DIVISION 3 - PIPE CULVERTS	
300.01	Method of Pipe Installation
310.10	Driveway Pipe Construction
DIVISION 4 - MAJOR STRUCTURES	
422.02	Bridge Approach Fills - Type II Modified Approach Fill
DIVISION 5 - SUBGRADE, BASES AND SHOULDERS	
560.01	Method of Shoulder Construction - High Side of Superelevated Curve - Method I
DIVISION 8 - INCIDENTALS	
840.29	Frames and Narrow Slot Flat Grates
840.35	Traffic Bearing Grated Drop Inlet - for Cast Iron Double Frame and Grates
840.46	Traffic Bearing Precast Drainage Structure
846.04	Drop Inlet Installation in Shoulder Berm Gutter
848.02	Driveway Turnout - Radius Type
862.01	Guardrail Placement
862.02	Guardrail Installation
862.03	Structure Anchor Units
876.01	Rip Rap in Channels
876.02	Guide for Rip Rap at Pipe Outlets
876.04	Drainage Ditches with Class 'B' Rip Rap

STATE OF NORTH CAROLINA, DIVISION OF HIGHWAYS CONVENTIONAL PLAN SHEET SYMBOLS

BOUNDARIES AND PROPERTY:

State Line	-----
County Line	-----
Township Line	-----
City Line	-----
Reservation Line	-----
Property Line	-----
Existing Iron Pin	○ EIP
Computed Property Corner	-----
Property Monument	□ ECM
Parcel/Sequence Number	①23
Existing Fence Line	-x-x-x-
Proposed Woven Wire Fence	○
Proposed Chain Link Fence	□
Proposed Barbed Wire Fence	◇
Existing Wetland Boundary	--- WLB ---
Proposed Wetland Boundary	--- WLB ---
Existing Endangered Animal Boundary	--- EAB ---
Existing Endangered Plant Boundary	--- EPB ---
Existing Historic Property Boundary	--- HPB ---
Known Contamination Area: Soil	☠-S-☠
Potential Contamination Area: Soil	☠-S-☠
Known Contamination Area: Water	☠-W-☠
Potential Contamination Area: Water	☠-W-☠
Contaminated Site: Known or Potential	---

BUILDINGS AND OTHER CULTURE:

Gas Pump Vent or U/G Tank Cap	○
Sign	○ S
Well	○ W
Small Mine	⊗
Foundation	□
Area Outline	□
Cemetery	□
Building	□
School	□
Church	□
Dam	---

HYDROLOGY:

Stream or Body of Water	-----
Hydro, Pool or Reservoir	-----
Jurisdictional Stream	--- JS ---
Buffer Zone 1	--- BZ 1 ---
Buffer Zone 2	--- BZ 2 ---
Flow Arrow	←
Disappearing Stream	→
Spring	○
Wetland	---
Proposed Lateral, Tail, Head Ditch	---
False Sump	---

RAILROADS:

Standard Gauge	-----
RR Signal Milepost	○ MILEPOST 35
Switch	□ SWITCH
RR Abandoned	-----
RR Dismantled	-----

RIGHT OF WAY & PROJECT CONTROL:

Secondary Horiz and Vert Control Point	---
Primary Horiz Control Point	---
Primary Horiz and Vert Control Point	---
Exist Permanent Easement Pin and Cap	---
New Permanent Easement Pin and Cap	---
Vertical Benchmark	---
Existing Right of Way Marker	---
Existing Right of Way Line	---
New Right of Way Line	---
New Right of Way Line with Pin and Cap	---
New Right of Way Line with Concrete or Granite R/W Marker	---
New Control of Access Line with Concrete C/A Marker	---
Existing Control of Access	---
New Control of Access	---
Existing Easement Line	---
New Temporary Construction Easement	---
New Temporary Drainage Easement	---
New Permanent Drainage Easement	---
New Permanent Drainage / Utility Easement	---
New Permanent Utility Easement	---
New Temporary Utility Easement	---
New Aerial Utility Easement	---

ROADS AND RELATED FEATURES:

Existing Edge of Pavement	-----
Existing Curb	-----
Proposed Slope Stakes Cut	--- C ---
Proposed Slope Stakes Fill	--- F ---
Proposed Curb Ramp	---
Existing Metal Guardrail	---
Proposed Guardrail	---
Existing Cable Guiderail	---
Proposed Cable Guiderail	---
Equality Symbol	---
Pavement Removal	---

VEGETATION:

Single Tree	---
Single Shrub	---

Note: Not to Scale

*S.U.E. = Subsurface Utility Engineering

Hedge	-----
Woods Line	-----
Orchard	---
Vineyard	---

EXISTING STRUCTURES:

MAJOR:	
Bridge, Tunnel or Box Culvert	---
Bridge Wing Wall, Head Wall and End Wall	---
MINOR:	
Head and End Wall	---
Pipe Culvert	---
Footbridge	---
Drainage Box: Catch Basin, DI or JB	---
Paved Ditch Gutter	---
Storm Sewer Manhole	---
Storm Sewer	---

UTILITIES:

POWER:	
Existing Power Pole	---
Proposed Power Pole	---
Existing Joint Use Pole	---
Proposed Joint Use Pole	---
Power Manhole	---
Power Line Tower	---
Power Transformer	---
U/G Power Cable Hand Hole	---
H-Frame Pole	---
U/G Power Line LOS B (S.U.E.*)	---
U/G Power Line LOS C (S.U.E.*)	---
U/G Power Line LOS D (S.U.E.*)	---

TELEPHONE:

Existing Telephone Pole	---
Proposed Telephone Pole	---
Telephone Manhole	---
Telephone Pedestal	---
Telephone Cell Tower	---
U/G Telephone Cable Hand Hole	---
U/G Telephone Cable LOS B (S.U.E.*)	---
U/G Telephone Cable LOS C (S.U.E.*)	---
U/G Telephone Cable LOS D (S.U.E.*)	---
U/G Telephone Conduit LOS B (S.U.E.*)	---
U/G Telephone Conduit LOS C (S.U.E.*)	---
U/G Telephone Conduit LOS D (S.U.E.*)	---
U/G Fiber Optics Cable LOS B (S.U.E.*)	---
U/G Fiber Optics Cable LOS C (S.U.E.*)	---
U/G Fiber Optics Cable LOS D (S.U.E.*)	---

WATER:

Water Manhole	---
Water Meter	---
Water Valve	---
Water Hydrant	---
U/G Water Line LOS B (S.U.E.*)	---
U/G Water Line LOS C (S.U.E.*)	---
U/G Water Line LOS D (S.U.E.*)	---
Above Ground Water Line	---

TV:

TV Pedestal	---
TV Tower	---
U/G TV Cable Hand Hole	---
U/G TV Cable LOS B (S.U.E.*)	---
U/G TV Cable LOS C (S.U.E.*)	---
U/G TV Cable LOS D (S.U.E.*)	---
U/G Fiber Optic Cable LOS B (S.U.E.*)	---
U/G Fiber Optic Cable LOS C (S.U.E.*)	---
U/G Fiber Optic Cable LOS D (S.U.E.*)	---

GAS:

Gas Valve	---
Gas Meter	---
U/G Gas Line LOS B (S.U.E.*)	---
U/G Gas Line LOS C (S.U.E.*)	---
U/G Gas Line LOS D (S.U.E.*)	---
Above Ground Gas Line	---

SANITARY SEWER:

Sanitary Sewer Manhole	---
Sanitary Sewer Cleanout	---
U/G Sanitary Sewer Line	---
Above Ground Sanitary Sewer	---
SS Forced Main Line LOS B (S.U.E.*)	---
SS Forced Main Line LOS C (S.U.E.*)	---
SS Forced Main Line LOS D (S.U.E.*)	---

MISCELLANEOUS:

Utility Pole	---
Utility Pole with Base	---
Utility Located Object	---
Utility Traffic Signal Box	---
Utility Unknown U/G Line LOS B (S.U.E.*)	---
U/G Tank; Water, Gas, Oil	---
Underground Storage Tank, Approx. Loc.	---
A/G Tank; Water, Gas, Oil	---
Geoenvironmental Boring	---
U/G Test Hole LOS A (S.U.E.*)	---
Abandoned According to Utility Records	---
End of Information	---

SURVEY CONTROL SHEET

W/EXISTING CENTERLINE ALIGNMENTS PRIOR TO CONSTRUCTION

DATUM DESCRIPTION

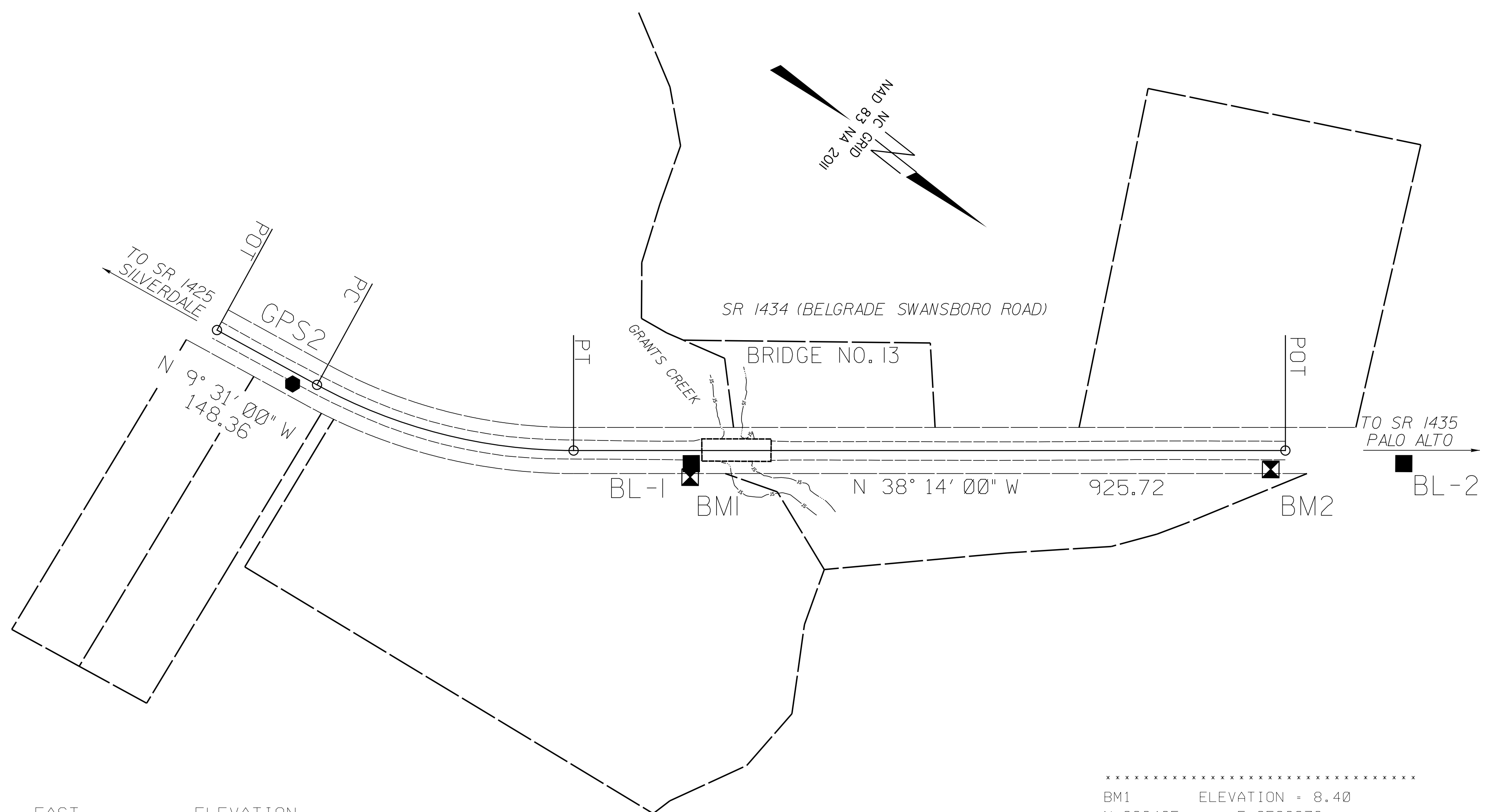
THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "GPS-2"

WITH NAD 83/NSRS 2011 STATE PLANE GRID COORDINATES OF
 NORTHING: 385984.045(±) EASTING: 2536600.624(±)
 ELEVATION: 20.818(±)

THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.9999086800

THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "GPS-2" TO -L- STATION IS

ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
 VERTICAL DATUM USED IS NAVD 88



BL	POINT	DESC.	NORTH	EAST	ELEVATION
	GPS1	GPS CAP & REBAR	384807.2680	2536793.0680	23.32
	GPS2	GPS CAP & REBAR	385984.0450	2536600.6240	20.82
	BL1	TRV CAP & REBAR	386455.4573	2536361.0833	9.12
	BL2	TRV CAP & REBAR	387183.3343	2535787.7829	23.97

.....

BM1 ELEVATION = 8.40
 N 386465 E 2536376
 BL STATION 22+21.19 17.74 RIGHT
 RR SPIKE SET IN 12" GUM TREE

.....

BM2 ELEVATION = 25.09
 N 387052 E 2535901
 BL STATION 29+74.75 7.50 RIGHT
 RR SPIKE SET IN 24" GUM TREE

.....

EL	POINT	N	E	BEARING	DIST	DELTA	D	L	T	R
	POT	385863.411	2536606.448							
	LINE			N 09° 31' 00.0" W	148.36					
	PC	386009.735	2536581.918							
	CURVE			N 23° 52' 30.0" W	344.45	28° 43' 00.0" (LT)	08° 15' 00.0"	348.08	177.78	694.49
	PT	386324.709	2536442.505							
	LINE			N 38° 14' 00.0" W	925.72					
	POT	387051.858	2535869.610							

- NOTES:**
- IF FURTHER INFORMATION REGARDING PROJECT CONTROL IS NEEDED, PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.
 - PROJECT CONTROL WAS ESTABLISHED USING GNSS, THE GLOBAL NAVIGATION SATELLITE SYSTEM.

REVISIONS

27-APR-2016 11:05 AM C:\Users\j660013.LS.1C\171116.dgn

PROJECT REFERENCE NO.	SHEET NO.
17BP.3.R.55	1D
Location and Surveys	

PROPOSED ALIGNMENT CONTROL SHEET

TYPE	STATION	L	
		NORTH	EAST
POT	10+00.00	385907.9571	2536598.9803
PC	11+03.07	386009.6069	2536581.9396
PT	14+51.40	386324.8109	2536442.4249
POT	23+28.69	387013.9210	2535899.4992

REVISIONS

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NOTES:

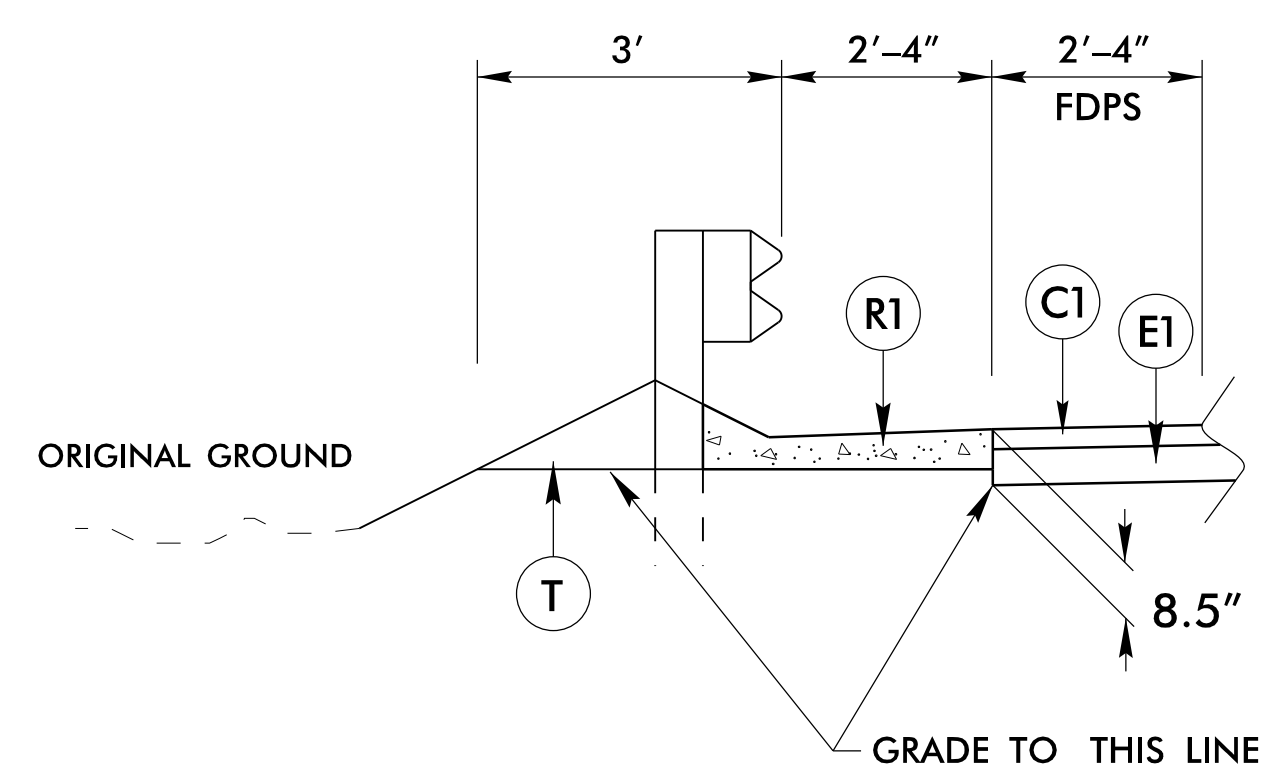
- IF FURTHER INFORMATION REGARDING PROJECT CONTROL IS NEEDED, PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.
- PROJECT CONTROL WAS ESTABLISHED USING GNSS, THE GLOBAL NAVIGATION SATELLITE SYSTEM.

6/2/09

PAVEMENT SCHEDULE (FINAL PAVEMENT SCHEDULE)

C1	PROP. APPROX. 3" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 165 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.
C2	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 110 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT LESS THAN 1" IN DEPTH OR GREATER THAN 1.5" IN DEPTH.
E1	PROP. APPROX. 5½" ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 627 LBS. PER SQ. YD.
R1	SHOULDER BERM GUTTER
T	EARTH MATERIAL

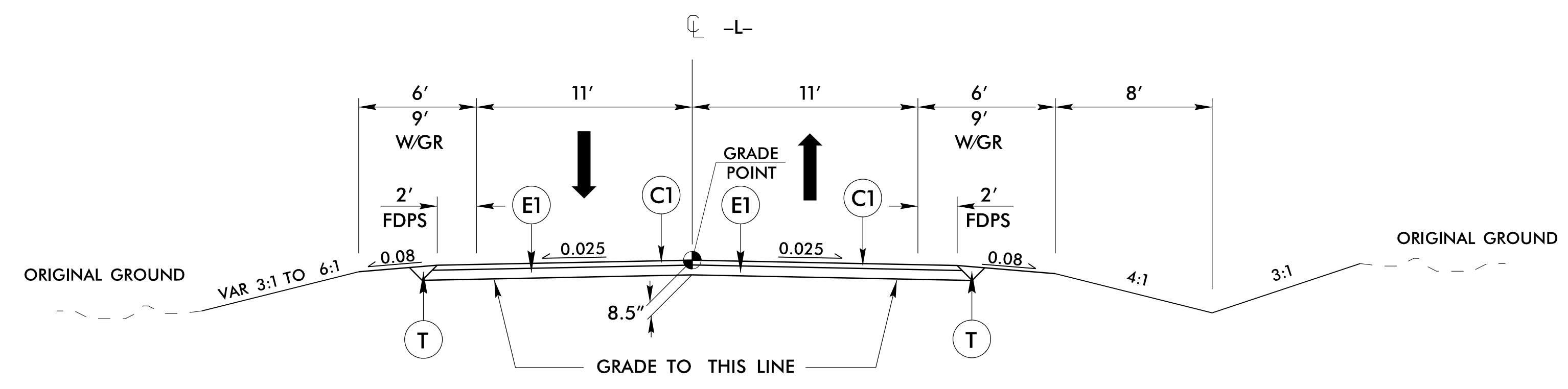
NOTE: ALL PAVEMENT SLOPES ARE 1:1 UNLESS NOTED OTHERWISE



SHOULDER BERM GUTTER DETAIL
-L- STA. 15+89.45 TO L- STA. 16+01.81 LT /RT

BRIDGE NO. 13

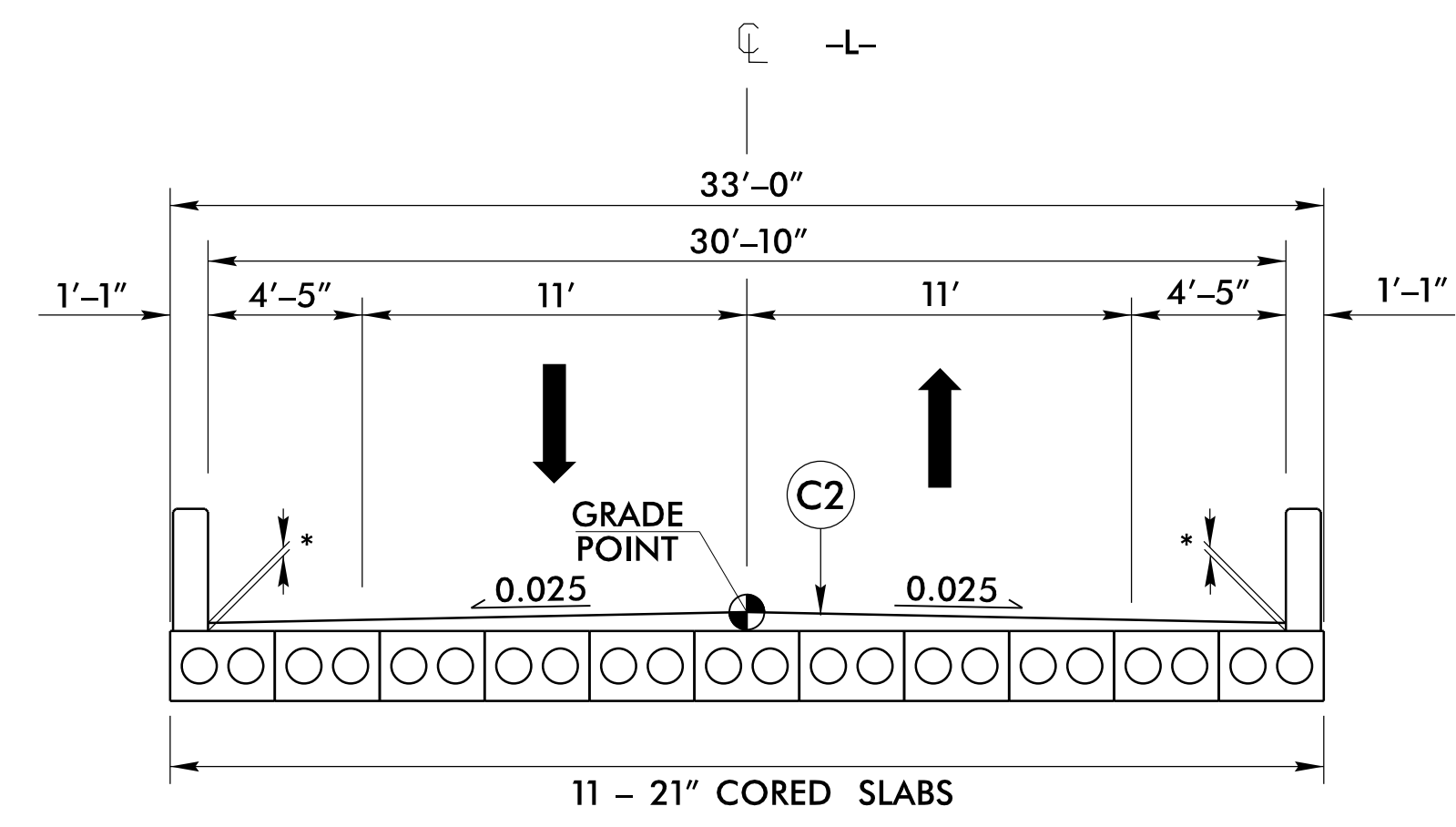
PROJECT REFERENCE NO. 17BP.3.R.55	SHEET NO. 2A-1
ROADWAY DESIGN ENGINEER 	PAVEMENT DESIGN ENGINEER
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	



TYPICAL SECTION NO. 1

USE TYPICAL SECTION NO. 1

-L- STA. 12+00.00 TO -L- STA. 16+13.81 (BEGIN BRIDGE)
-L- STA. 17+16.19 (END BRIDGE) TO -L- STA. 20+00.00



TYPICAL SECTION NO. 2

USE TYPICAL SECTION NO. 2

* PAVEMENT DEPTH VARIES ACROSS BRIDGE, SEE STRUCTURES PLANS

-L- STA. 16+13.81 TO -L- STA. 17+16.19

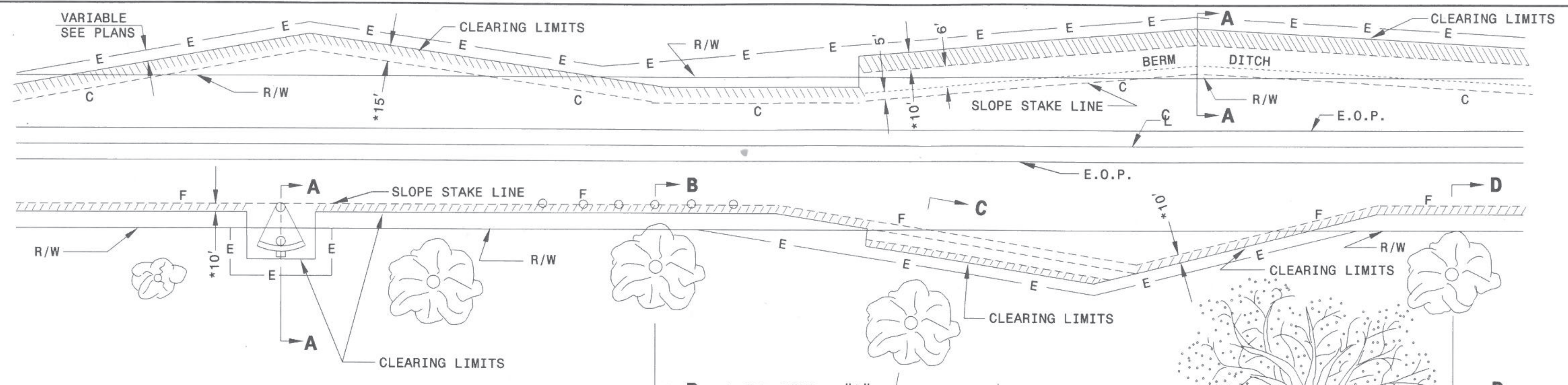
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5/14/99

STATE OF NORTH CAROLINA
 DEPT. OF TRANSPORTATION
 DIVISION OF HIGHWAYS
 RALEIGH, N.C.

ENGLISH DETAIL DRAWING FOR
METHOD OF CLEARING
 MODIFIED METHOD - III

SHEET 1 OF 1
200D03



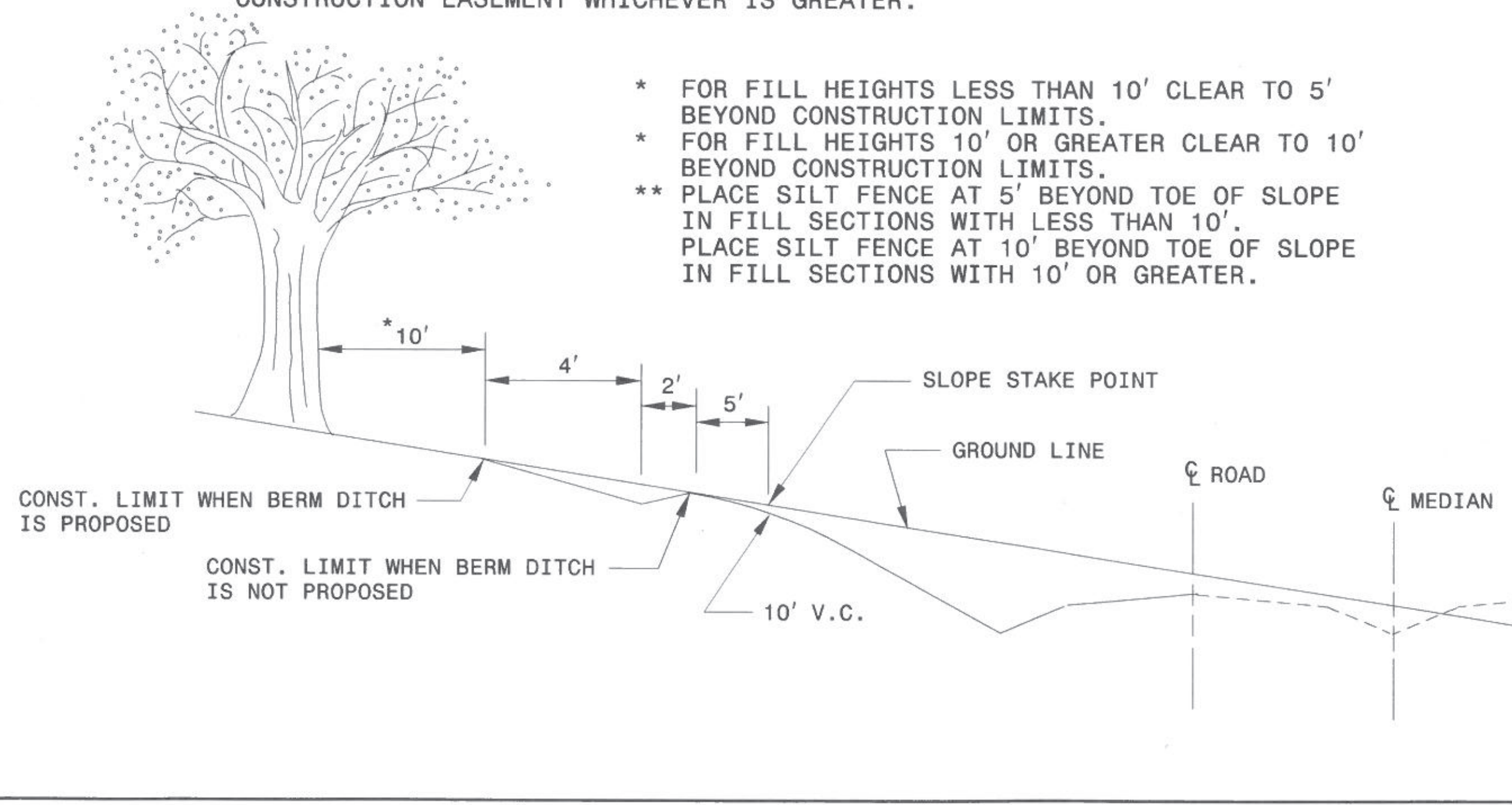
GENERAL NOTES:

1. REMOVE TREES OUTSIDE THE CLEARING LIMIT WHEN, IN THE OPINION OF THE ENGINEER, THE UTILITY OF A TREE WILL BE DESTROYED BY THE CONSTRUCTION OR THE CLEARING OPERATION.
2. CLEAR IN ACCORDANCE WITH THIS STANDARD EXCEPT WHERE ADDITIONAL CLEARING IS REQUIRED FOR SAFETY AS SHOWN ON THE PLANS.

METHOD III CLEARING LIMITS

- (A) CUTS -- CLEAR TO CONSTRUCTION LIMITS.
- (B) FILLS - CLEAR TO 5'/10' * BEYOND CONSTRUCTION LIMITS, UNLESS SPECIFIED OTHERWISE BY WETLAND PERMIT.
- (C) CUTS AND FILLS - WHEN THE CLEARING LIMITS (A AND B) EXCEED THE PROPOSED R/W OR PROPOSED CONSTRUCTION EASEMENTS, THEN CLEAR ONLY TO THE R/W OR CONSTRUCTION EASEMENT WHICHEVER IS GREATER.

- * FOR FILL HEIGHTS LESS THAN 10' CLEAR TO 5' BEYOND CONSTRUCTION LIMITS.
- * FOR FILL HEIGHTS 10' OR GREATER CLEAR TO 10' BEYOND CONSTRUCTION LIMITS.
- ** PLACE SILT FENCE AT 5' BEYOND TOE OF SLOPE IN FILL SECTIONS WITH LESS THAN 10'. PLACE SILT FENCE AT 10' BEYOND TOE OF SLOPE IN FILL SECTIONS WITH 10' OR GREATER.



STATE OF NORTH CAROLINA
 DEPT. OF TRANSPORTATION
 DIVISION OF HIGHWAYS
 RALEIGH, N.C.

ENGLISH DETAIL DRAWING FOR
METHOD OF CLEARING
 MODIFIED METHOD - III

SHEET 1 OF 1
200D03

CONTRACT STANDARDS AND DEVELOPMENT UNIT
 Office 919-707-6950 FAX 919-250-4119

SEE TITLE BLOCK

ORIGINAL BY: T.S.S.	DATE: FEB.2000
MODIFIED BY: K.A.K.	DATE: AUG.2016
CHECKED BY:	DATE:
FILE SPEC.: k Kempf/english/0200d301.dgn	

SYSTEMS
 DESIGN
 CONSULTANTS

12/06/07

COMPUTED BY: CJY DATE: 9-6-2017
CHECKED BY: ACD DATE: 11-15-2017

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PROJECT REFERENCE NO. 17BP.3.R.55
SHEET NO. 3B-1

SUMMARY OF EARTHWORK

Table with columns: STATION, UNCL. EXCAV., EMBANK. +%, BORROW, WASTE. Includes subtotals and grand totals for earthwork items.

PAVEMENT REMOVAL SUMMARY

Table with columns: SURVEY LINE, STATION, LOCATION L/R/T/CL, YD. Includes total and say values for pavement removal.

SHOULDER BERM GUTTER SUMMARY

Table with columns: SURVEY LINE, STATION, LENGTH. Includes total and say values for gutter work.

NOTE: INVERT ELEVATIONS INDICATED ARE FOR BID PURPOSES ONLY AND SHALL NOT BE USED FOR PROJECT CONSTRUCTION STAKE OUT. SEE "STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES, SECTION 300-5".

LIST OF PIPES, ENDWALLS, ETC. (FOR PIPES 48" & UNDER)

Large table listing pipe details: STATION, SIZE, THICKNESS, DRAINAGE PIPE, C.S. PIPE, R.C. PIPE, ENDWALLS, QUANTITIES, TYPE OF GRATE, etc.

"N" = DISTANCE FROM EDGE OF LANE TO FACE OF GUARDRAIL.
TOTAL SHOULDER WIDTH = DISTANCE FROM EDGE OF TRAVEL LANE TO SHOULDER BREAK POINT.
FLARE LENGTH = DISTANCE FROM LAST SECTION OF PARALLEL GUARDRAIL TO END OF GUARDRAIL.
W = TOTAL WIDTH OF FLARE FROM BEGINNING OF TAPER TO END OF GUARDRAIL.
G = GATING IMPACT ATTENUATOR TYPE 350
NG = NON-GATING IMPACT ATTENUATOR TYPE 350

GUARDRAIL SUMMARY

Table with columns: SURVEY LINE, BEG. STA., END STA., LOCATION, LENGTH, WARRANT POINT, FLARE LENGTH, W, ANCHORS, IMPACT ATTENUATOR, SINGLE FACED GUARDRAIL, REMOVE EXISTING GUARDRAIL, REMOVE AND STOCKPILE EXISTING GUARDRAIL, REMARKS.

ANCHOR DEDUCTION
TYPE III: 4 @ 18.75' = 75'
TYPE TL-3: 4 @ 50' = 200'
GRAND TOTAL = 275'
ADDITIONAL GUARDRAIL POSTS = 5

23-APP-2018-107
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\$\$\$\$\$USERNAME\$\$\$\$\$

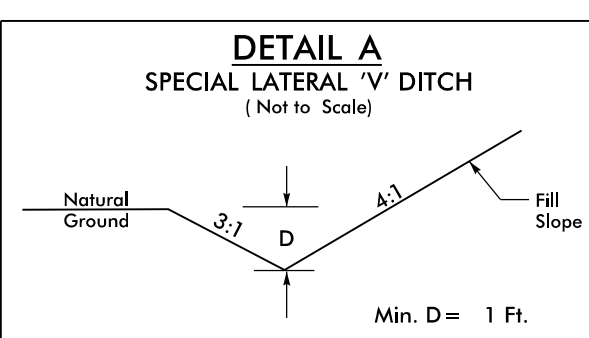
PROJECT REFERENCE NO. 17BP.3.R.55	SHEET NO. 4
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
5/9/2018 8:40:52 AM EDT	5/9/2018 10:33:17 AM EDT
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

BRIDGE NO. 13

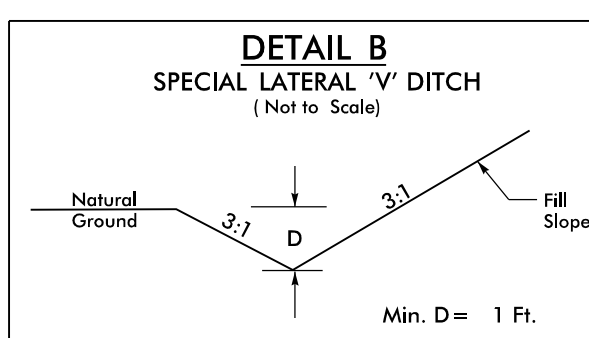


-L- CURVE DATA

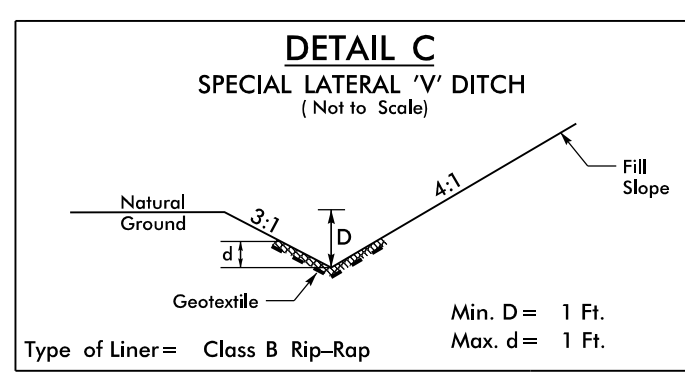
PI Sta 12+80.98
 $\Delta = 28^\circ 43' 00.00''$ (LT)
 $D = 8' 14'' 38.4''$
 $L = 348.33'$
 $T = 177.91'$
 $R = 695.00'$
 SE = MATCH EXIST
 RO = SEE PLANS



FROM STA. 12+00 TO STA. 13+00 RT
 FROM STA. 18+50 TO STA. 19+00 RT
 FROM STA. 12+00 TO STA. 12+86 LT
 FROM STA. 19+04 TO STA. 19+95 LT

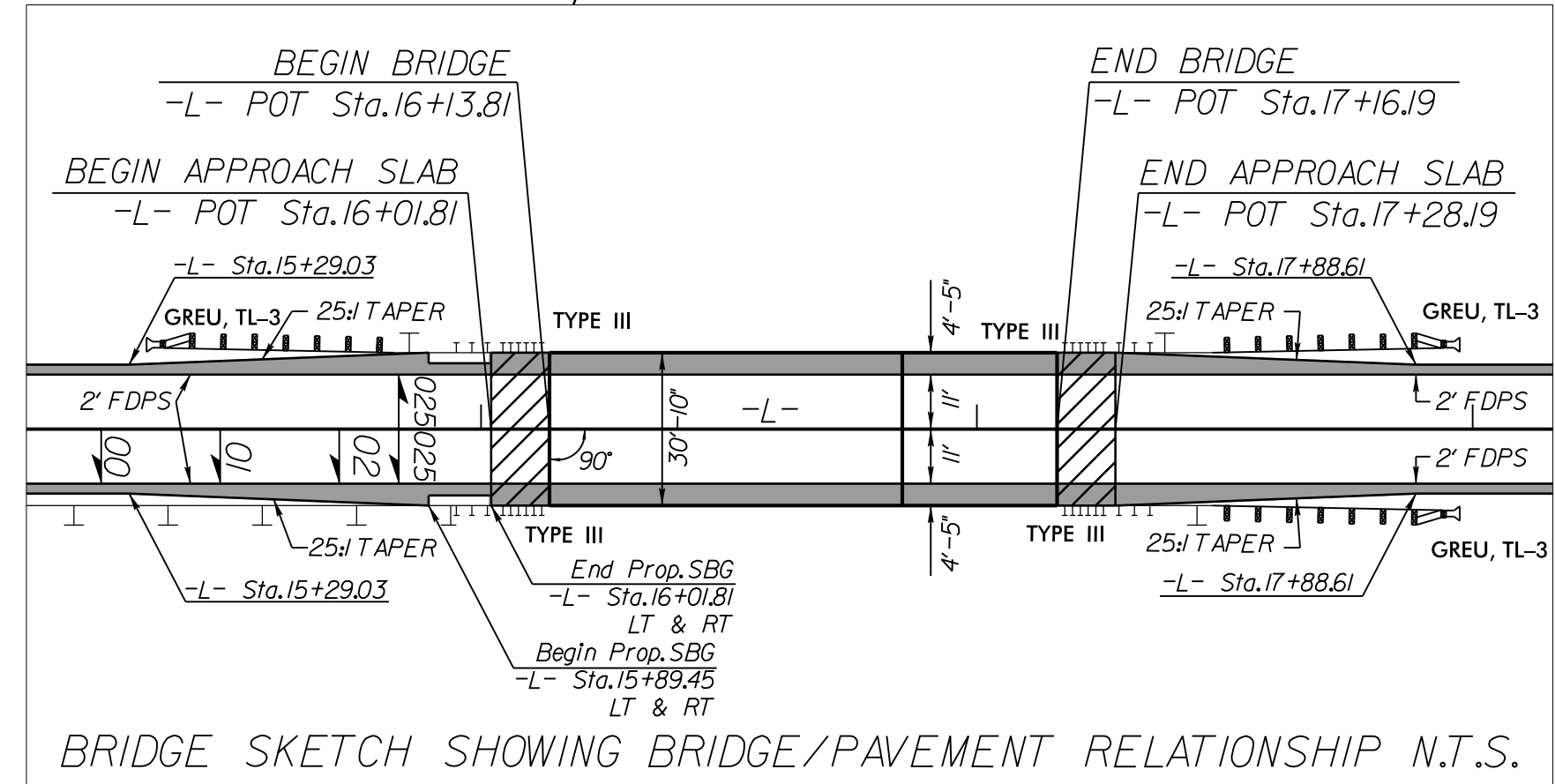
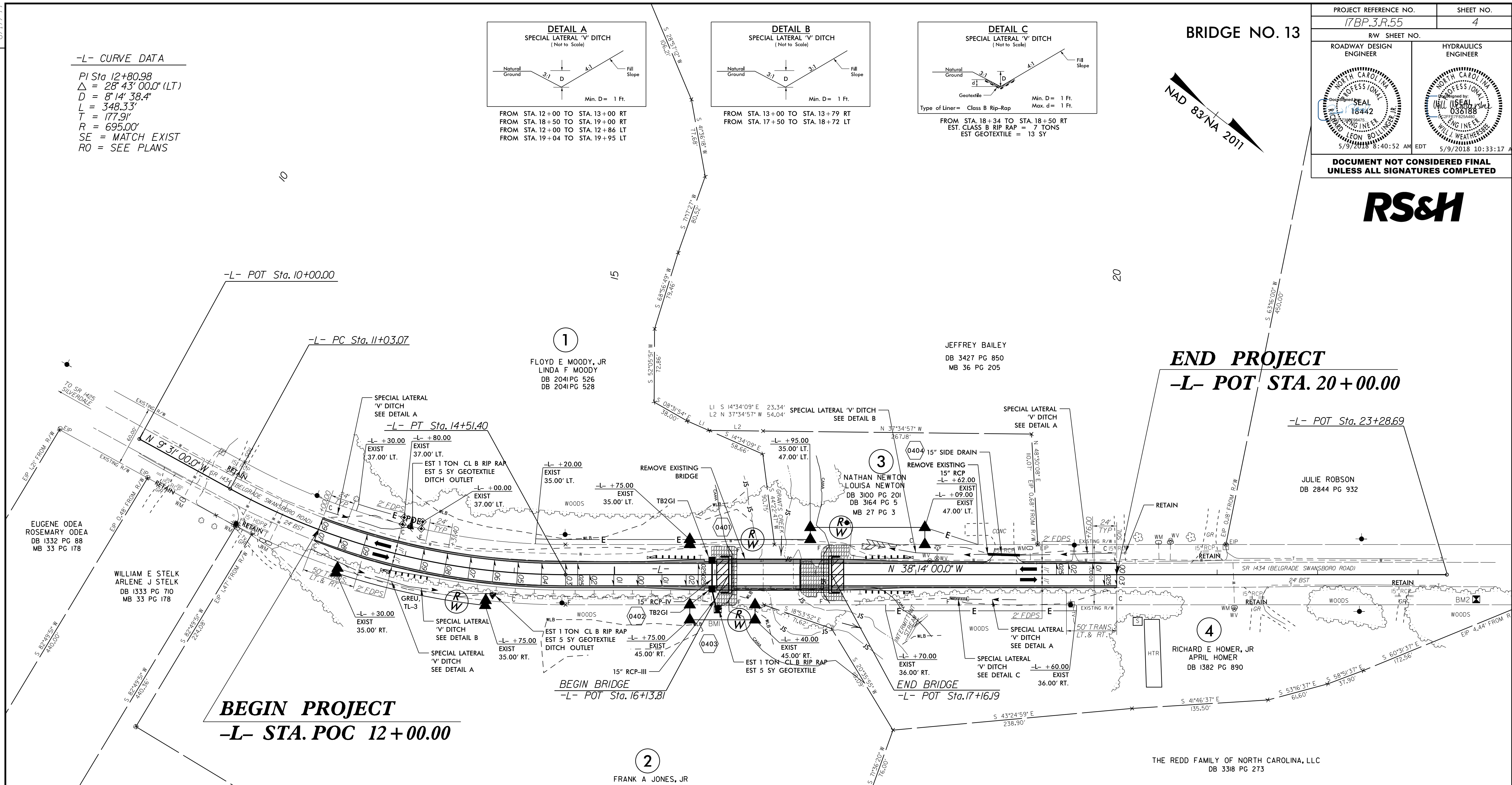


FROM STA. 13+00 TO STA. 13+79 RT
 FROM STA. 17+50 TO STA. 18+72 LT



FROM STA. 18+34 TO STA. 18+50 RT
 EST CLASS B RIP RAP = 7 TONS
 EST GEOTEXTILE = 13 SY

REVISIONS



BRIDGE APPROACH SLAB
 FOR -L- PROFILE SEE SHEET 5
 FOR STRUCTURE PLANS, SEE SHEET S-1 THRU S-19

03 MAY 2018 08:06 C:\6602013_Rd\psh_4.dgn
 RS RoadPlan
 \$\$\$\$DISPERM\$\$\$\$

5/28/99

STRUCTURE HYDRAULIC DATA

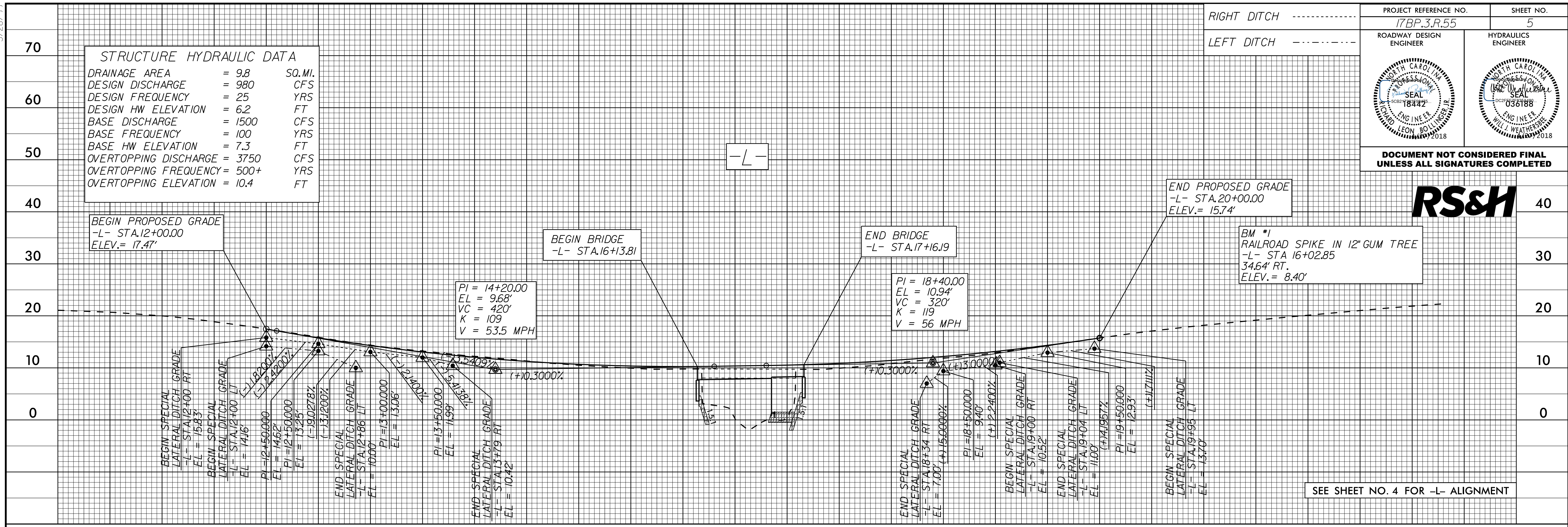
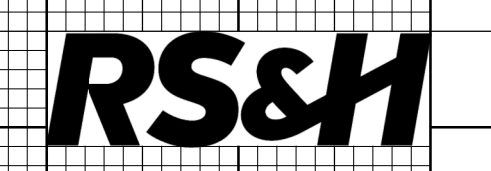
DRAINAGE AREA	= 9.8	SQ. MI.
DESIGN DISCHARGE	= 980	CFS
DESIGN FREQUENCY	= 25	YRS
DESIGN HW ELEVATION	= 6.2	FT
BASE DISCHARGE	= 1500	CFS
BASE FREQUENCY	= 100	YRS
BASE HW ELEVATION	= 7.3	FT
OVERTOPPING DISCHARGE	= 3750	CFS
OVERTOPPING FREQUENCY	= 500+	YRS
OVERTOPPING ELEVATION	= 10.4	FT

RIGHT DITCH -----

LEFT DITCH -----

PROJECT REFERENCE NO.	17BP.3.R.55	SHEET NO.	5
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	

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BEGIN PROPOSED GRADE
-L- STA. 12+00.00
ELEV. = 17.47'

BEGIN BRIDGE
-L- STA. 16+13.81

END BRIDGE
-L- STA. 17+16.19

END PROPOSED GRADE
-L- STA. 20+00.00
ELEV. = 15.74'

BM *1
RAILROAD SPIKE IN 12" GUM TREE
-L- STA 16+02.85
34.64' RT.
ELEV. = 8.40'

PI = 14+20.00
EL = 9.68'
VC = 420'
K = 109
V = 53.5 MPH

PI = 18+40.00
EL = 10.94'
VC = 320'
K = 119
V = 56 MPH

BEGIN SPECIAL LATERAL DITCH GRADE
-L- STA. 12+00 RT
EL = 15.85'

BEGIN SPECIAL LATERAL DITCH GRADE
-L- STA. 12+00 LT
EL = 14.16'

PI = 12+50.000
EL = 14.62'

PI = 12+50.000
EL = 13.25'

(-13.200%)

END SPECIAL LATERAL DITCH GRADE
-L- STA. 12+86 LT
EL = 10.00'

PI = 13+00.000
EL = 13.06'

PI = 13+50.000
EL = 14.99'

END SPECIAL LATERAL DITCH GRADE
-L- STA. 13+79 RT
EL = 10.42'

PI = 13+50.000
EL = 14.99'

END SPECIAL LATERAL DITCH GRADE
-L- STA. 13+79 RT
EL = 10.42'

(+10.3000%)

END SPECIAL LATERAL DITCH GRADE
-L- STA. 18+34 RT
EL = 7.00'

PI = 18+50.000
EL = 9.40'

(+12.400%)

BEGIN SPECIAL LATERAL DITCH GRADE
-L- STA. 19+00 RT
EL = 10.52'

END SPECIAL LATERAL DITCH GRADE
-L- STA. 19+04 LT
EL = 11.00'

PI = 19+50.000
EL = 12.93'

(+11.7112%)

BEGIN SPECIAL LATERAL DITCH GRADE
-L- STA. 19+95 LT
EL = 13.70'

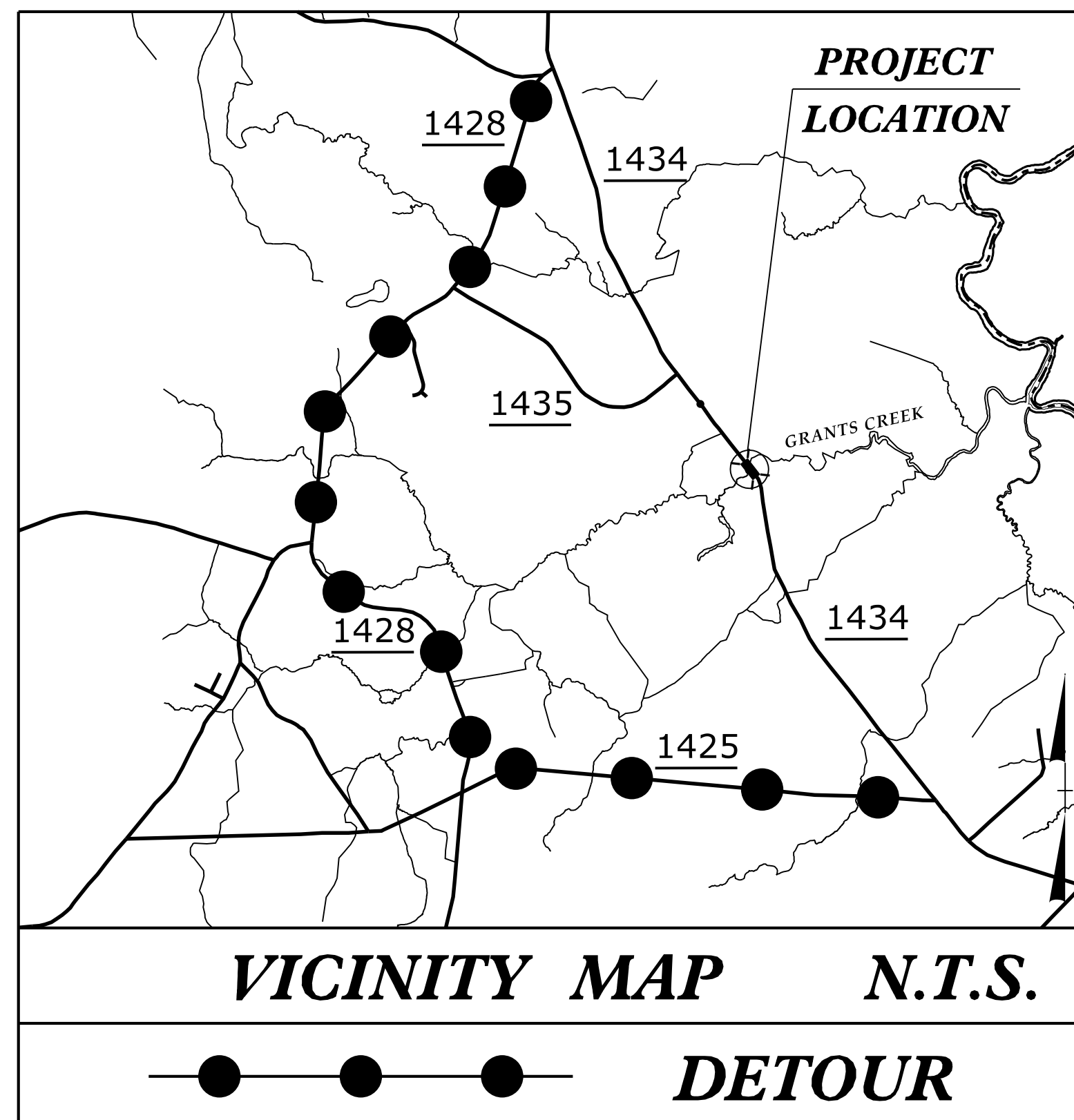
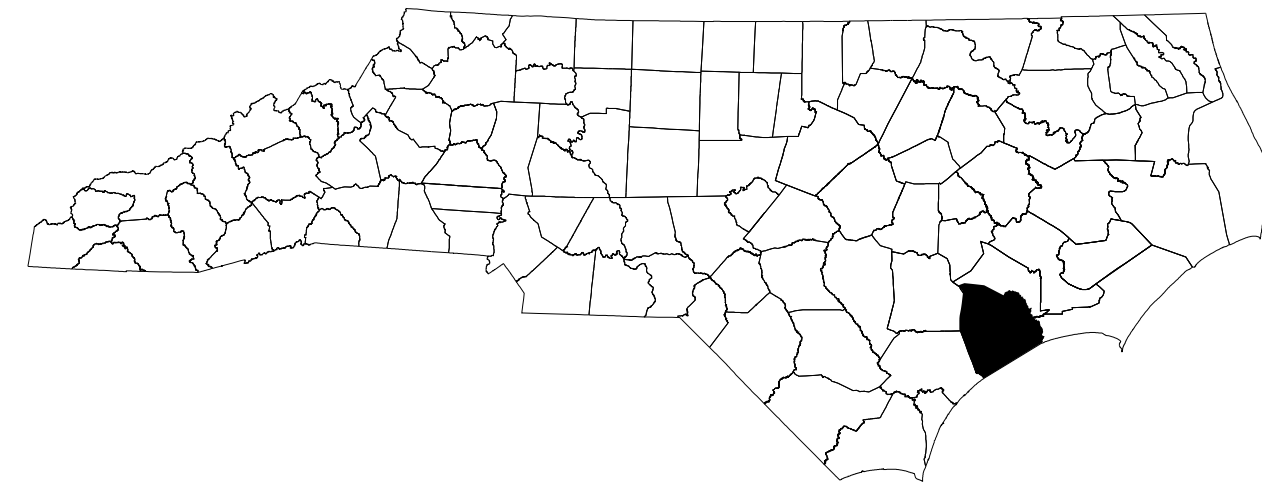
SEE SHEET NO. 4 FOR -L- ALIGNMENT

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

TRANSPORTATION MANAGEMENT PLAN

ONSLOW COUNTY

**LOCATION: BRIDGE NO. 13 OVER GRANTS CREEK
ON SR 1434 (BELGRADE-SWANSBORO ROAD)**



INDEX OF SHEETS

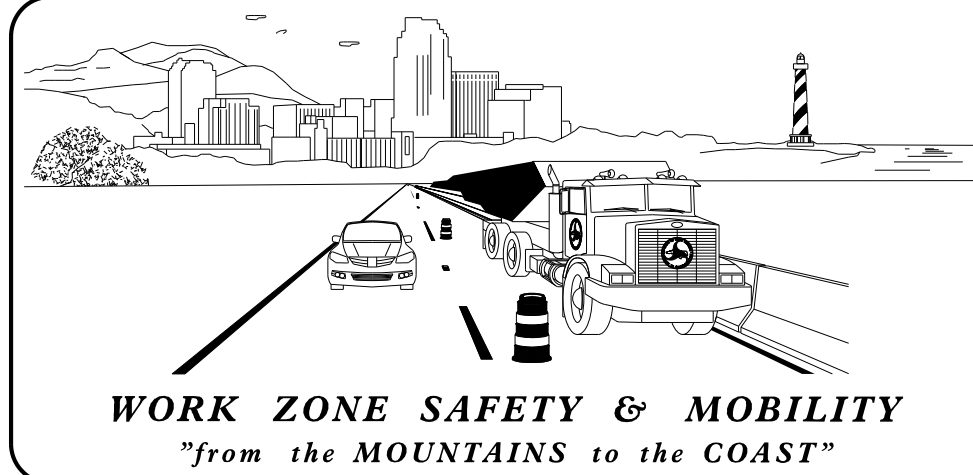
SHEET NO.	TITLE
TMP-1	TITLE SHEET, VICINITY MAP, AND INDEX OF SHEETS
TMP-1A	LIST OF APPLICABLE ROADWAY STANDARD DRAWINGS AND LEGEND
TMP-1B	TRANSPORTATION OPERATIONS PLAN: (MANAGEMENT STRATEGY, GENERAL NOTES, AND LOCAL NOTES) AND PHASING
TMP-2	BELGRADE-SWANSBORO SIGN DESIGN
TMP-3	BELGRADE-SWANSBORO ROAD DETOUR

SHEET NO.
TMP-1

17BP.3.R.55

WBS PROJECT:

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UNLESS ALL SIGNATURES COMPLETED**



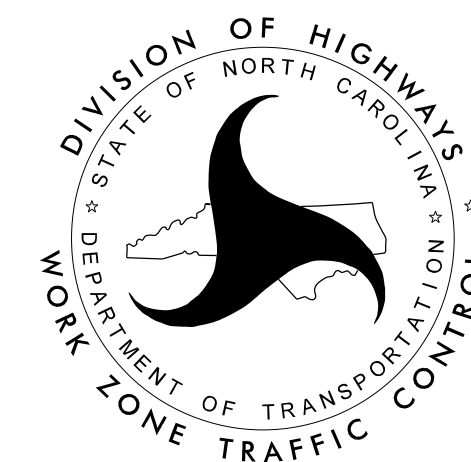
PLANS PREPARED BY:

ANNIE C. PILZ, P.E.
PROJECT ENGINEER

MAILE L. KAWAHAKUI, E.I.
PROJECT DESIGN ENGINEER

NCDOT CONTACTS:

AL EDGERTON
DIVISION 3
BRIDGE PROGRAM MANAGER



APPROVED:
DATE: 4/27/2018



ROADWAY STANDARD DRAWINGS

THE FOLLOWING ROADWAY STANDARDS AS SHOWN IN "ROADWAY STANDARD DRAWINGS" - PROJECT SERVICES UNIT - N.C. DEPARTMENT OF TRANSPORTATION - RALEIGH, N.C., DATED JANUARY 2018 ARE APPLICABLE TO THIS PROJECT AND BY REFERENCE HEREBY ARE CONSIDERED A PART OF THESE PLANS:

STD. NO.	TITLE
1101.03	TEMPORARY ROAD CLOSURES
1101.11	TRAFFIC CONTROL DESIGN TABLES
1110.01	STATIONARY WORK ZONE SIGNS
1145.01	BARRICADES

LEGEND

GENERAL

- DIRECTION OF TRAFFIC FLOW
- DIRECTION OF PEDESTRIAN TRAFFIC FLOW
- EXIST. PVMT.
- NORTH ARROW
- PROPOSED PVMT.
- TEMP. SHORING (LOCATION PURPOSES ONLY)
- WORK AREA
- REMOVAL

SIGNALS

- EXISTING
- PROPOSED
- TEMPORARY

PAVEMENT MARKINGS

- EXISTING LINES
- TEMPORARY LINES

TRAFFIC CONTROL DEVICES

- BARRICADE (TYPE III)
- CONE
- DRUM
- SKINNY DRUM
- TUBULAR MARKER
- TEMPORARY CRASH CUSHION
- FLASHING ARROW BOARD
- FLAGGER
- LAW ENFORCEMENT
- TRUCK MOUNTED ATTENUATOR (TMA)
- CHANGEABLE MESSAGE SIGN

TEMPORARY SIGNING

- PORTABLE SIGN
- STATIONARY SIGN
- STATIONARY OR PORTABLE SIGN

PAVEMENT MARKERS

- CRYSTAL/CRYSTAL
- CRYSTAL/RED
- YELLOW/YELLOW

PAVEMENT MARKING SYMBOLS

- PAVEMENT MARKING SYMBOLS

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APPROVED: DATE: 4/27/2018			LIST OF APPLICABLE ROADWAY STANDARD DRAWINGS AND LEGEND
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED			

MANAGEMENT STRATEGY

THE PROPOSED STRUCTURE (BR. NO. 13 OVER GRANTS CREEK) AND ROADWAY ON -L- (SR 1434 BELGRADE-SWANSBORO RD.) WILL BE CONSTRUCTED UTILIZING ROAD CLOSURES AND AN OFF-SITE DETOUR ALONG SMITH RD. (SR 1425) AND RIGGS RD. (SR 1428).

GENERAL NOTES

CHANGES MAY BE REQUIRED WHEN PHYSICAL DIMENSIONS IN THE DETAIL DRAWINGS, STANDARD DETAILS, AND ROADWAY DETAILS ARE NOT ATTAINABLE TO MEET FIELD CONDITIONS OR RESULT IN DUPLICATE OR UNDESIRED OVERLAPPING OF DEVICES. MODIFICATION MAY INCLUDE: MOVING, SUPPLEMENTING, COVERING, OR REMOVAL OF DEVICES AS DIRECTED BY THE ENGINEER.

THE FOLLOWING GENERAL NOTES APPLY AT ALL TIMES FOR THE DURATION OF THE CONSTRUCTION PROJECT EXCEPT WHEN OTHERWISE NOTED IN THE PLAN OR DIRECTED BY THE ENGINEER.

TRAFFIC PATTERN ALTERATIONS

- A) NOTIFY THE ENGINEER THIRTY (30) CALENDAR DAYS PRIOR TO ANY TRAFFIC PATTERN ALTERATION.

SIGNING

- B) PROVIDE SIGNING AND DEVICES REQUIRED TO CLOSE THE ROAD ACCORDING TO THE ROADWAY STANDARD DRAWINGS AND TRAFFIC CONTROL PLANS.

PROVIDE SIGNING REQUIRED FOR THE OFF-SITE DETOUR ROUTE AS SHOWN IN THE TRAFFIC CONTROL PLANS.
- C) COVER OR REMOVE ALL SIGNS AND DEVICES REQUIRED TO CLOSE THE ROAD WHEN ROAD CLOSURE IS NOT IN OPERATION.

COVER OR REMOVE ALL SIGNS REQUIRED FOR THE OFF-SITE DETOUR WHEN THE DETOUR IS NOT IN OPERATION.
- D) ENSURE ALL NECESSARY SIGNING IS IN PLACE PRIOR TO ALTERING ANY TRAFFIC PATTERN.

TRAFFIC CONTROL DEVICES

- E) PLACE TYPE III BARRICADES, WITH "ROAD CLOSED" SIGN R11-2 ATTACHED, OF SUFFICIENT LENGTH TO CLOSE ENTIRE ROADWAY.

LOCAL NOTES

1. DO NOT CLOSE BRIDGE NO. 11 AND BRIDGE NO. 13 SIMULTANEOUSLY.
2. CONTRACTOR SHALL CLOSE BRIDGE NO. 13 FIRST.
3. MAINTAIN ACCESS TO DRIVEWAYS AT ALL TIMES UNLESS OTHERWISE DIRECTED BY THE ENGINEER.


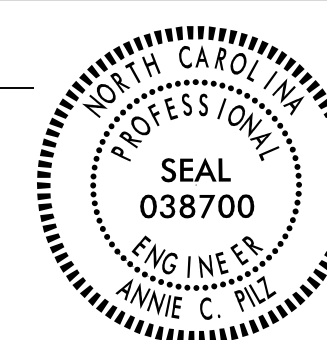

PHASING

THE CONTRACTOR SHALL COMPLETE THE WORK REQUIRED IN THIS PHASING BETWEEN JULY 23, 2018 AND DECEMBER 20, 2018 (SEE INTERMEDIATE CONTRACT TIME NUMBER 2 AND LIQUIDATED DAMAGES).

- STEP 1: USING THE ROADWAY STANDARD DRAWINGS INCLUDED ON SHEET TMP-1A IN CONJUNCTION WITH THE SIGNS INCLUDED ON SHEETS TMP-2 AND TMP-3, CLOSE SR 1434 (BELGRADE-SWANSBORO RD.) AND PLACE TRAFFIC ON OFF-SITE DETOUR.
- STEP 2: REMOVE EXISTING STRUCTURE NO. 13 AND CONSTRUCT PROPOSED ROADWAY, BRIDGE AND APPROACHES, UP TO AND INCLUDING THE FINAL LAYER OF SURFACE COURSE. PLACE FINAL PAVEMENT MARKINGS/MARKERS AND TIE-IN WITH EXISTING MARKINGS.
- STEP 3: REMOVE ALL TRAFFIC CONTROL DEVICES AND REOPEN ROAD TO FINAL TRAFFIC PATTERN.

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APPROVED:  DATE: 4/27/2018			MANAGEMENT STRATEGY AND GENERAL NOTES
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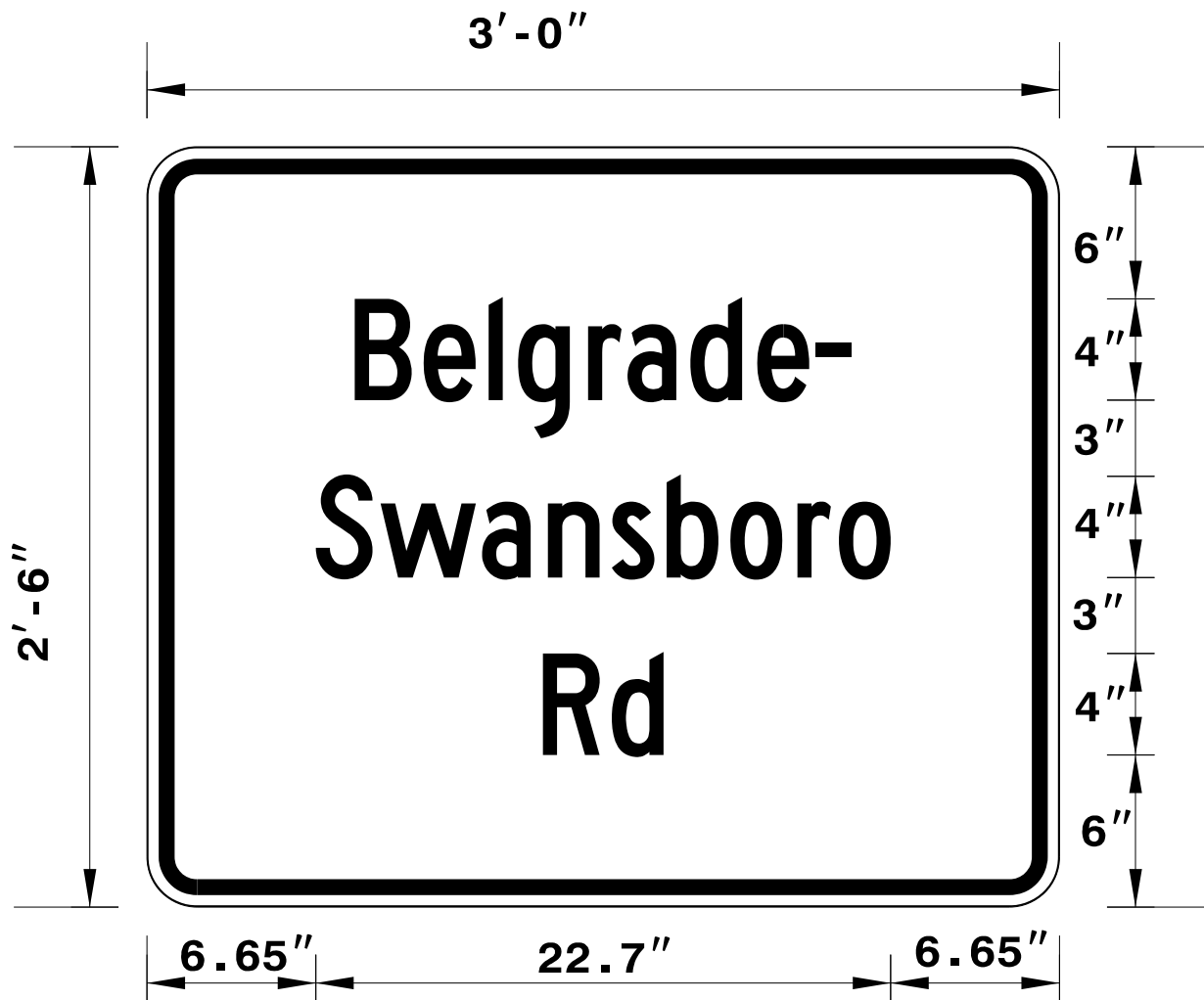
SIGN NUMBER: Belgrade-Swansboro Rd
 TYPE: STATIONARY
 QUANTITY: SEE PLANS
 SIGN WIDTH: 3'-0"
 HEIGHT: 2'-6"
 TOTAL AREA: 7.5 Sq.Ft.
 BORDER TYPE: INSET
 RECESS: 0.5"
 WIDTH: 0.75"
 RADII: 1.88"
 NO. Z BARS:
 LENGTH:

BACKG COLOR: Fluorescent Orange
 COPY COLOR: Black

SYMBOL	X	Y	WID	HT

MAT'L: 0.080" (2.0 mm) ALUMINUM

DESIGN BY: MLK CHECKED BY: ACP Mar 23, 2018
 PROJECT ID: 660013 LOCATION: ONSLOW DIV: 3



BORDER
 R=1.88"
 TH=0.75"
 IN=0.5"

USE NOTES: 1,2

- Legend and border shall be direct applied black non-reflective sheeting.
- Background shall be NC GRADE B fluorescent orange retroreflective sheeting.

Spacing Factor is 1 unless specified otherwise

LETTER POSITIONS

Letter spacings are to start of next letter														Series/Size		
		B	e	l	g	r	a	d	e	-					Text Length	
		8.2	2.7	2.6	1.2	2.8	1.6	2.5	2.6	2.3	1.4	8.2				C 2000
																19.6
		6.7	2.6	4	2.6	2.5	2.2	2.5	2.6	1.6	2	6.7				C 2000
																22.7
		15.6	2.7	2	15.6											C 2000
																4.8

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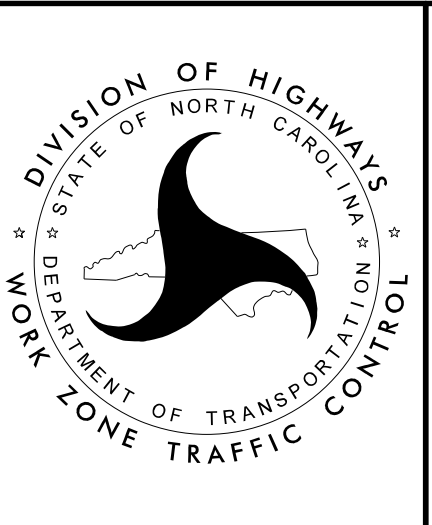
NORTH CAROLINA D.O.T. SIGN DETAIL



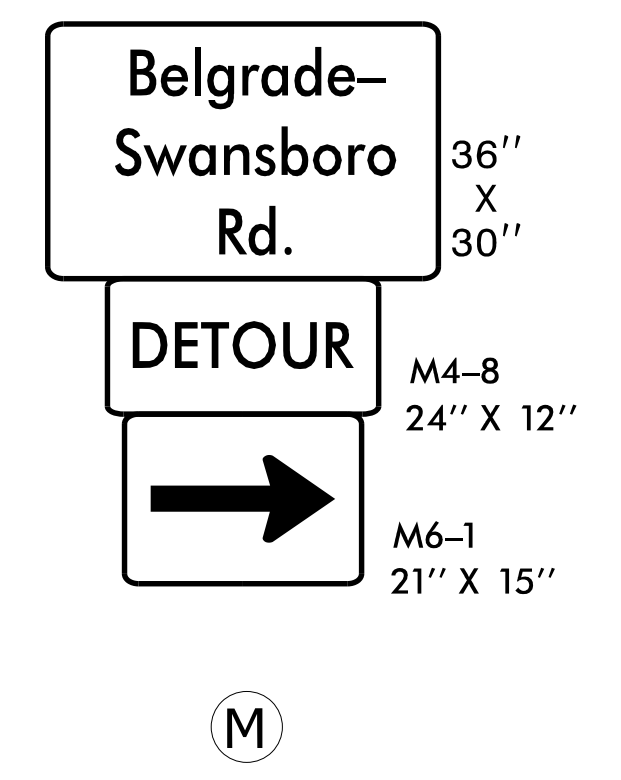
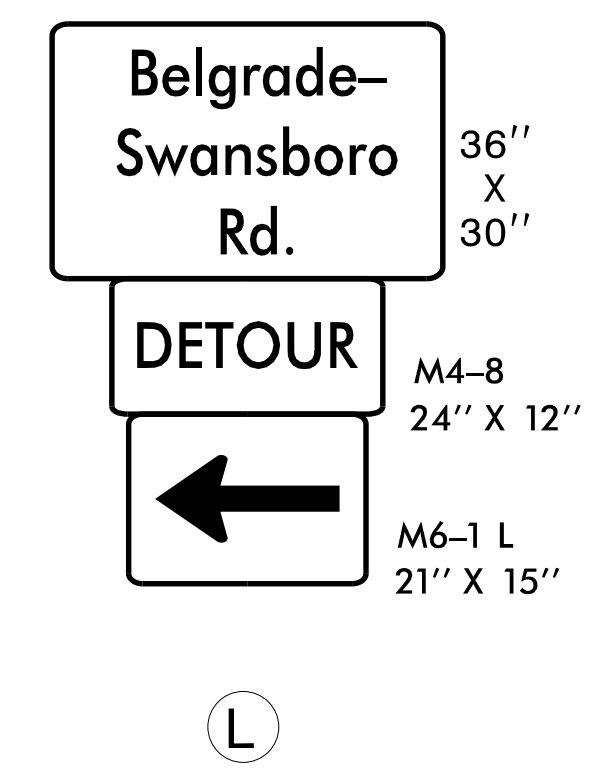
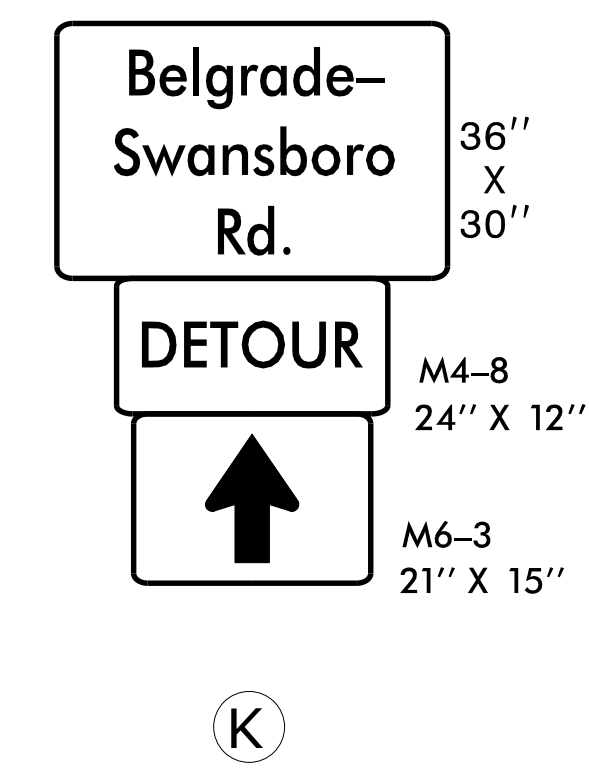
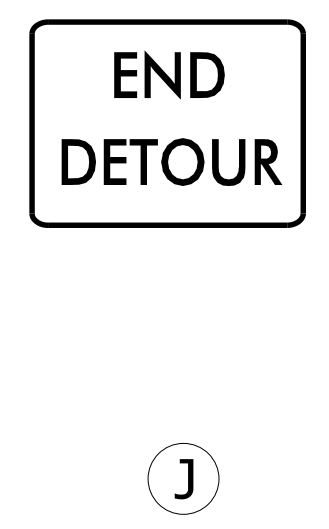
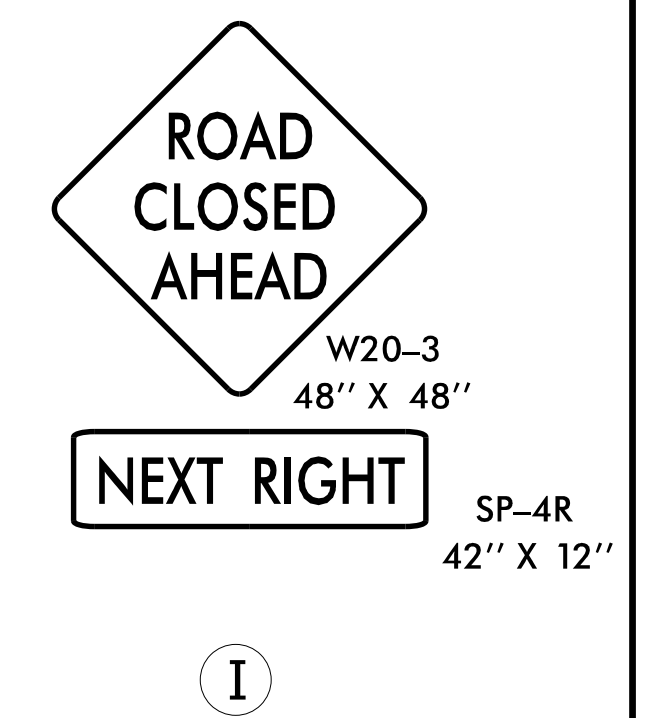
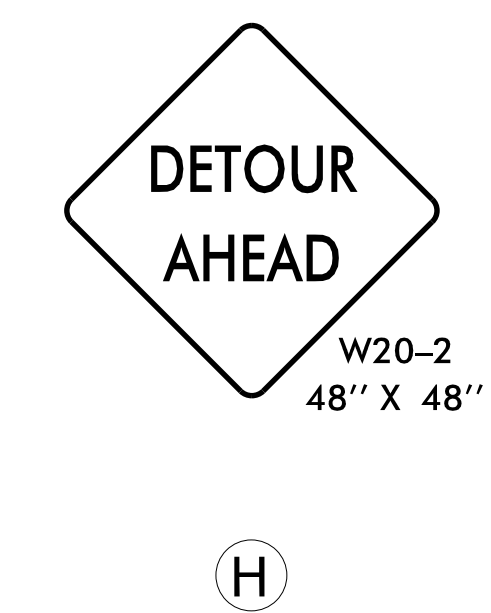
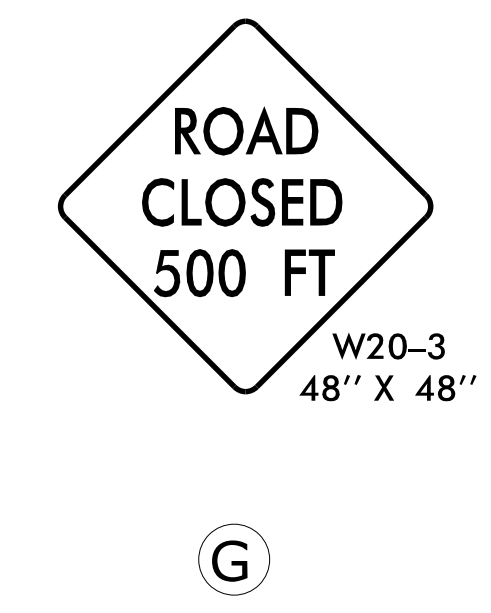
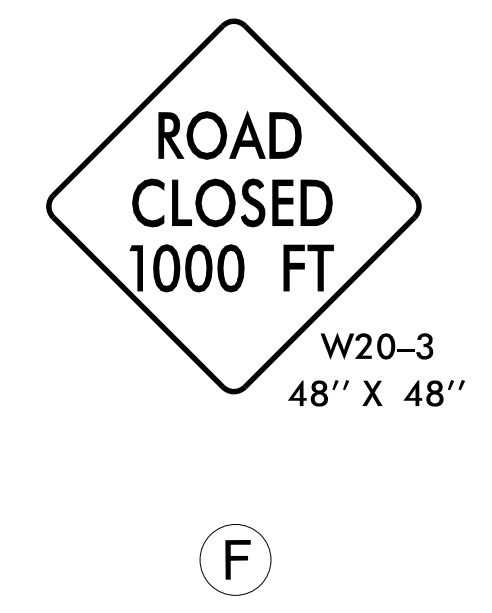
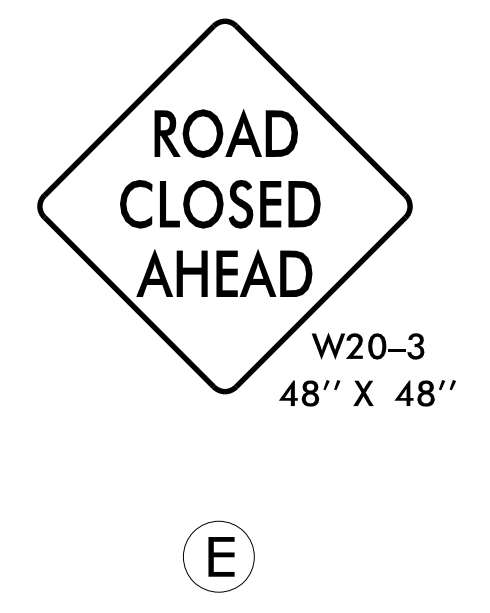
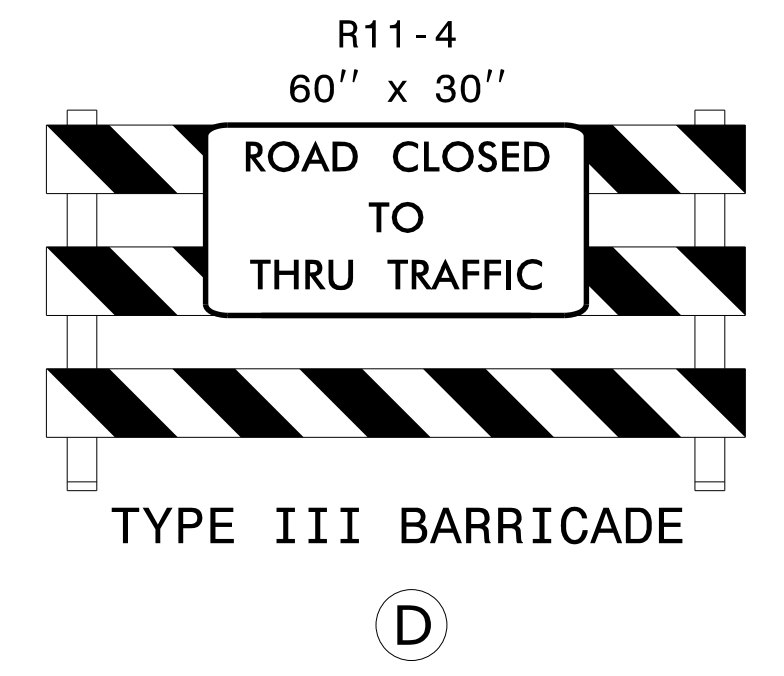
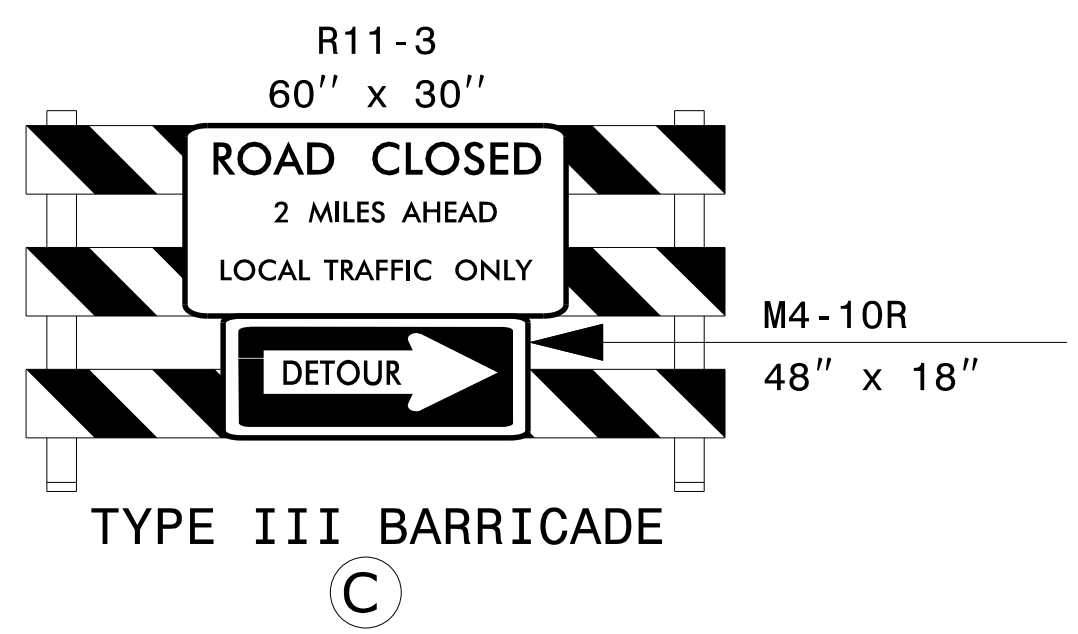
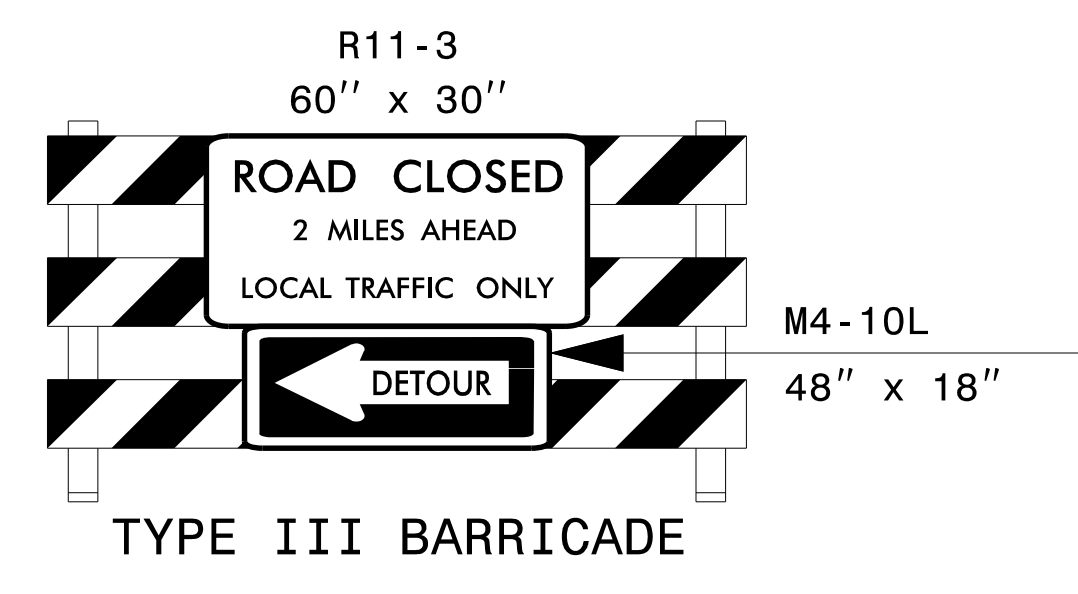
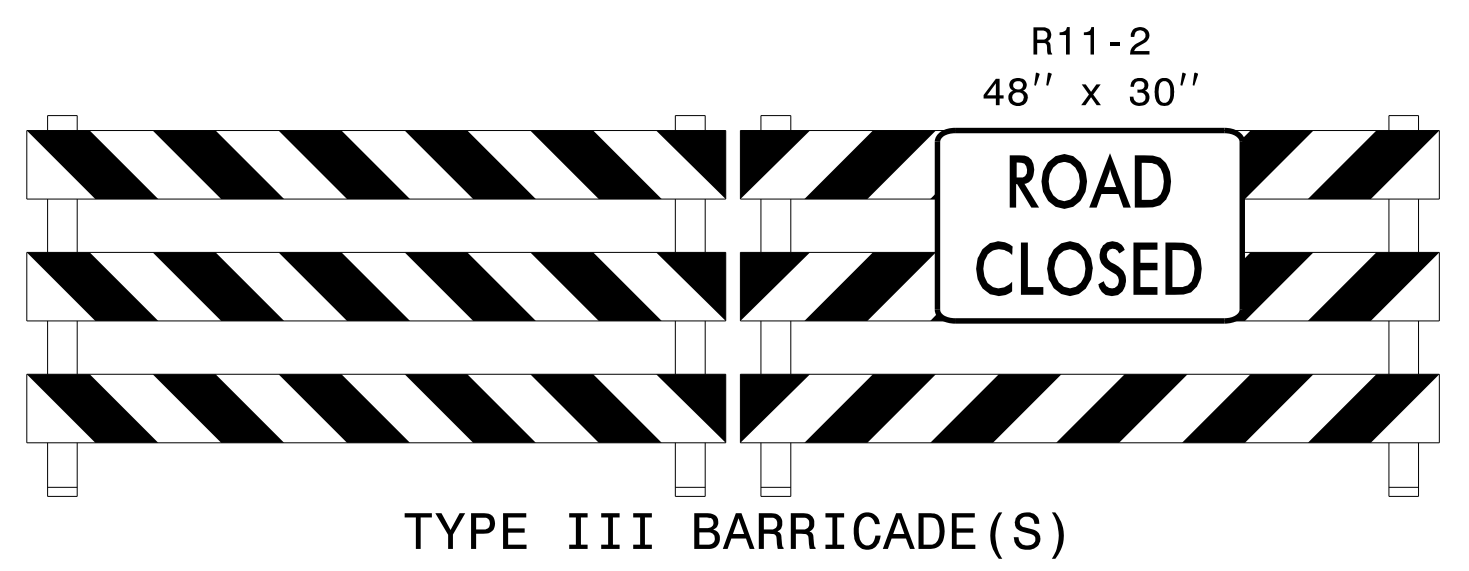
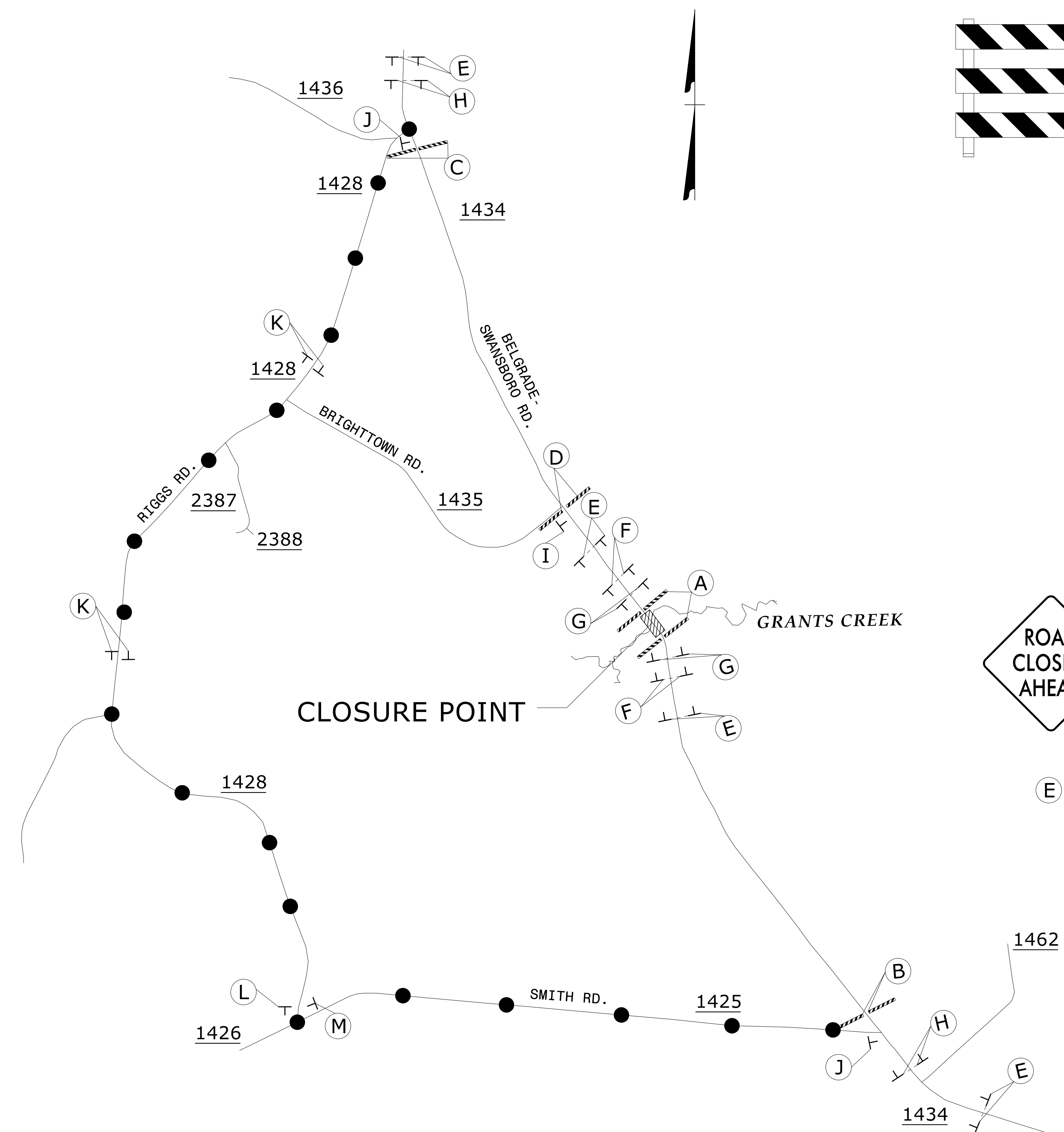
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BELGRADE-SWANSBORO ROAD
 SIGN DESIGN



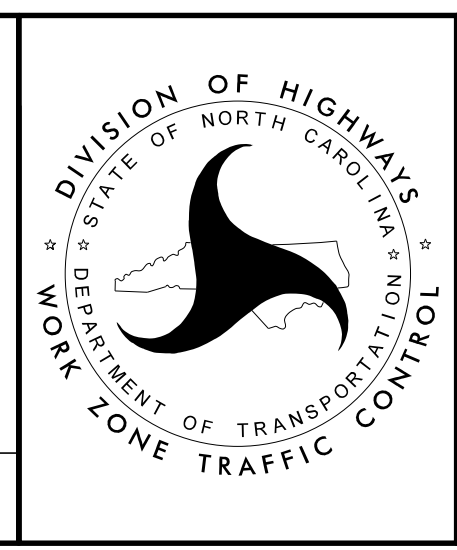
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APPROVED: 

DATE: 4/27/2018



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**BELGRADE - SWANSBORO
ROAD DETOUR**



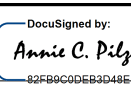
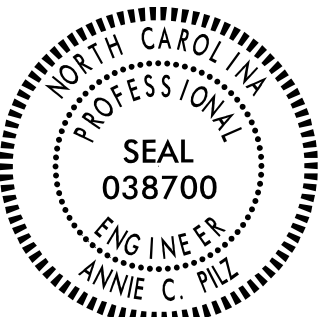
WBS: 17BP.3.R.55

CONTRACT: DC00208

**STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION**

**PAVEMENT MARKING PLAN
ON SLOW COUNTY**

**LOCATION: BRIDGE NO.13 OVER STARKYS CREEK
ON SR 1434 (BELGRADE-SWANSBORO ROAD)**

TIP NO. 17BP.3.R.55	SHEET NO. PMP-1
APPROVED: 	
DATE: 4/27/2018	
SEAL 	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

ROADWAY STANDARD DRAWING

THE FOLLOWING ROADWAY STANDARDS AS SHOWN IN "ROADWAY STANDARD DRAWINGS" - PROJECT SERVICES UNIT - N.C. DEPARTMENT OF TRANSPORTATION - RALEIGH, N.C., DATED JANUARY 2018 ARE APPLICABLE TO THIS PROJECT AND BY REFERENCE HEREBY ARE CONSIDERED A PART OF THESE PLANS:

STD. NO.	TITLE
1205.01	PAVEMENT MARKINGS - LINE TYPES AND OFFSETS
1205.02	PAVEMENT MARKINGS - TWO-LANE AND MULTILANE ROADWAYS
1205.12	PAVEMENT MARKINGS - BRIDGES
1250.01	RAISED PAVEMENT MARKERS - INSTALLATION AND SPACING
1251.01	RAISED PAVEMENT MARKERS - PERMANENT AND TEMPORARY
1261.01	GUARDRAIL AND BARRIER DELINEATOR SPACING
1261.02	GUARDRAIL AND BARRIER DELINEATOR TYPES
1262.01	GUARDRAIL END DELINEATION

PAVEMENT MARKING SCHEDULE

PA	WHITE EDGELINE	PAINT (4")
PI	YELLOW DOUBLE CENTER	PAINT (4")
MA	YELLOW/YELLOW MARKER	PERMANENT RAISED

GENERAL NOTES

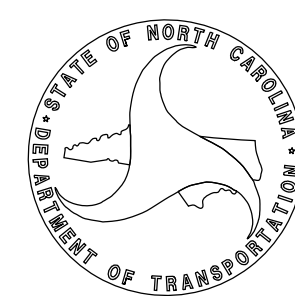
THE FOLLOWING GENERAL NOTES APPLY AT ALL TIMES FOR THE DURATION OF THE CONSTRUCTION PROJECT, EXCEPT WHEN OTHERWISE NOTED IN THE PLAN, OR AS DIRECTED BY THE ENGINEER.


- A) INSTALL PAVEMENT MARKINGS ON THE FINAL SURFACE AS FOLLOWS:

ROAD NAME	MARKING	MARKER
SR 1434	PAINT	PERMANENT RAISED
- B) PLACE TWO APPLICATIONS OF PAINT PAVEMENT MARKINGS ON THE FINAL WEARING SURFACE. PLACE THE SECOND APPLICATION OF PAINT UPON SUFFICIENT DRYING TIME OF THE FIRST.
- C) TIE PROPOSED PAVEMENT MARKING LINES TO EXISTING PAVEMENT MARKING LINES.
- D) REMOVE/REPLACE ANY CONFLICTING/DAMAGED PAVEMENT MARKINGS AND MARKERS.
- E) PASSING ZONES WILL BE DETERMINED IN THE FIELD AND MUST BE APPROVED BY THE ENGINEER.
- F) REMOVE ALL RESIDUE AND SURFACE LAITANCE BY ACCEPTABLE MTEHODS ON CONCRETE BRIDGE DECKS PRIOR TO PLACING PAINT PAVEMENT MARKING MATERIAL.

INDEX

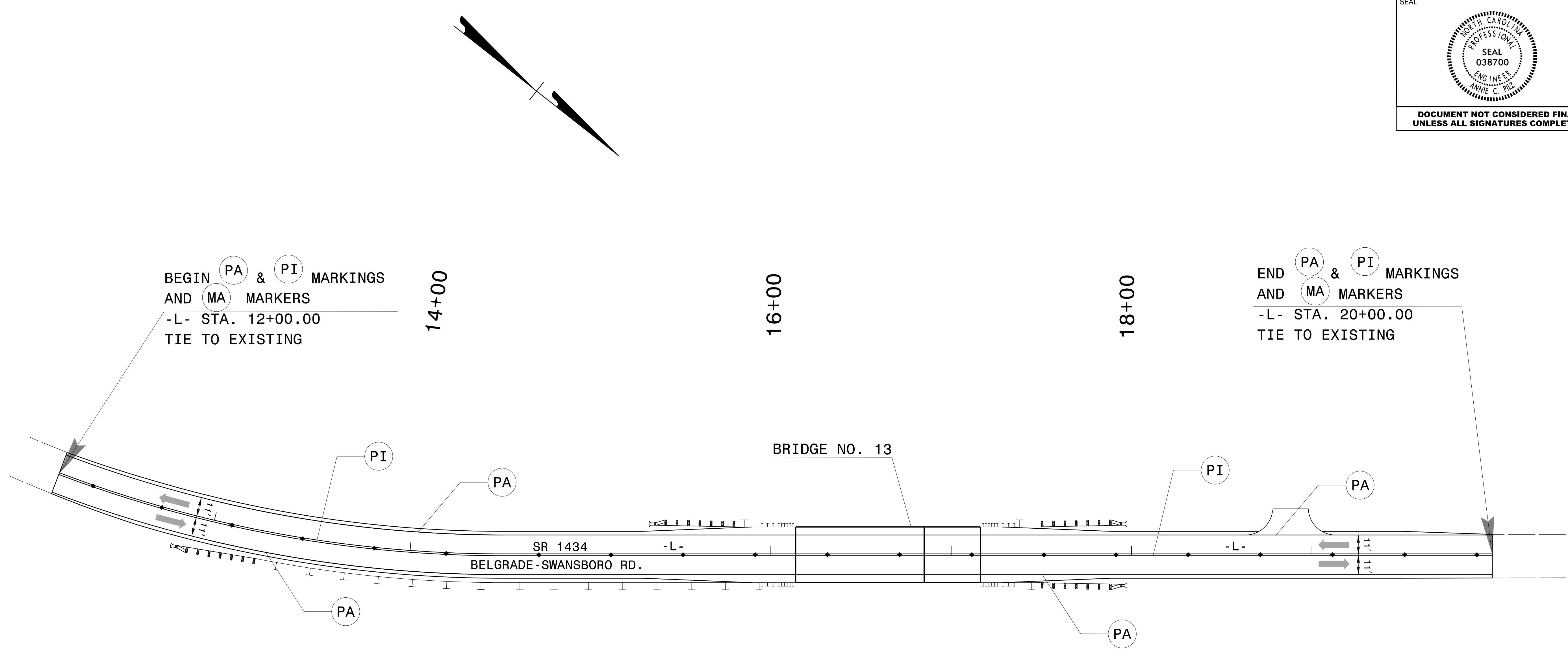
SHEET NO.	DESCRIPTION
PMP-1	PAVEMENT MARKING TITLE SHEET & PAVEMENT MARKING SCHEDULE
PMP-2	PAVEMENT MARKING DETAIL

PLAN SUBMITTED TO: NCDOT DIVISION 3	
AL EDGERTON DIVISION 3 BRIDGE PROGRAM MANAGER	

Prepared in the Office of: RS&H ARCHITECTS-ENGINEERS-PLANNERS, INC.		
ANNIE C. PILZ, PE	PROJECT ENGINEER	
SEAN KANE, EI	DESIGN ENGINEER	



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4/23/2018
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 User:rkawakw

PAVEMENT MARKING DETAIL

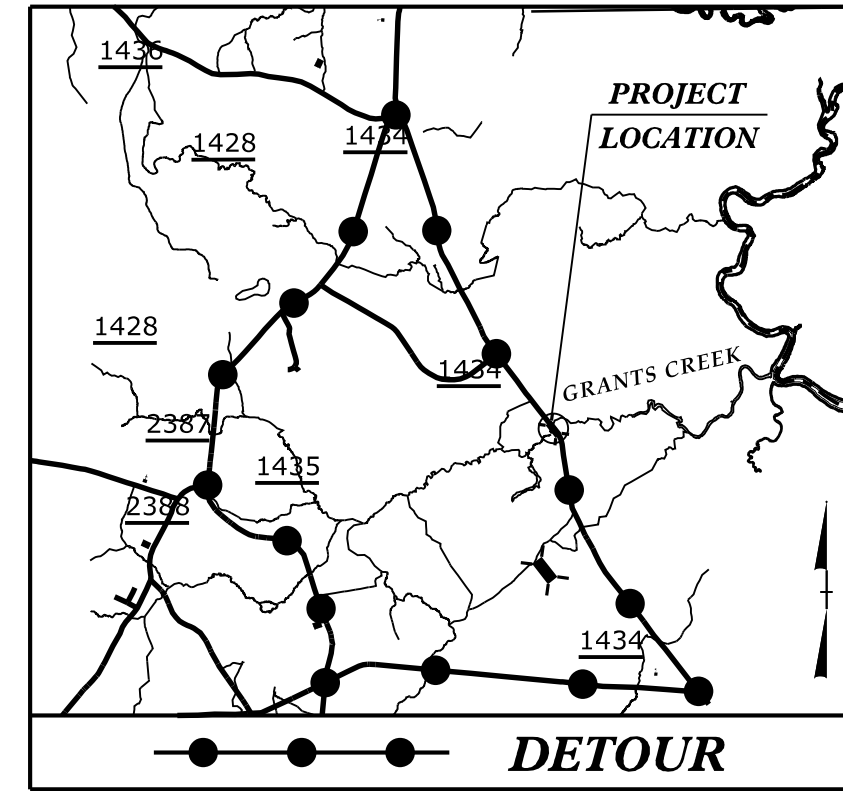
WBS ELEMENT: 17BP.3.R.55

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PLAN FOR PROPOSED
HIGHWAY EROSION CONTROL

ONSLOW COUNTY

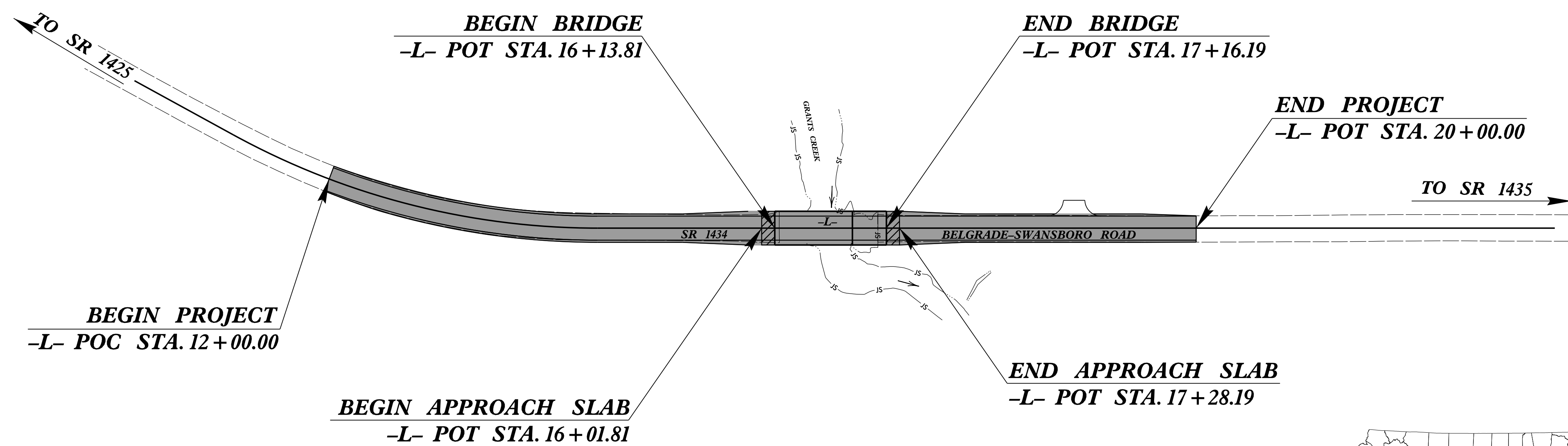
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	17BP.3.R.55	EC-1	7
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	



VICINITY MAP N.T.S.

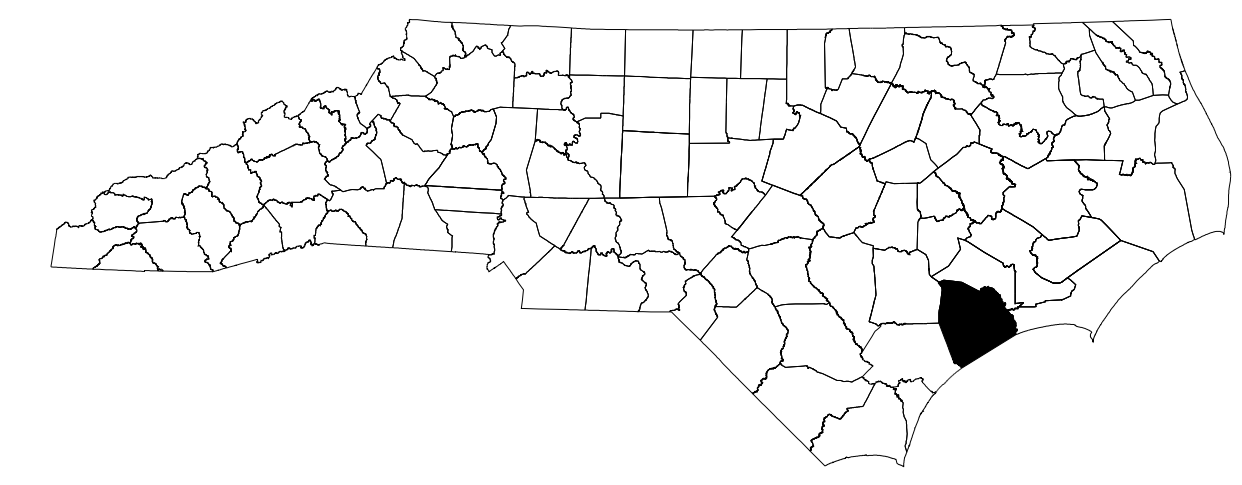
**LOCATION: BRIDGE NO. 13 OVER GRANTS CREEK
ON SR 1434 (BELGRADE-SWANSBORO ROAD)**

TYPE OF WORK: GRADING, DRAINAGE, PAVING, AND STRUCTURE (BRIDGE)



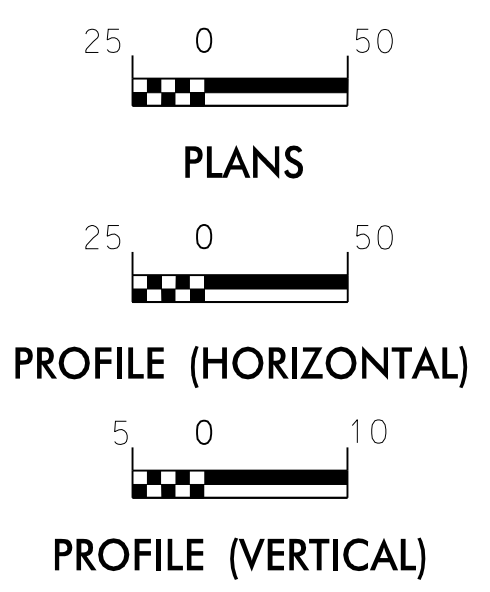
EROSION AND SEDIMENT CONTROL MEASURES

Std. #	Description	Symbol
1630.03	Temporary Silt Ditch	TD
1630.05	Temporary Diversion	TD
1605.01	Temporary Silt Fence	III III III
1606.01	Special Sediment Control Fence	△ △ △ △ △
1622.01	Temporary Berms and Slope Drains	—
1630.02	Silt Basin Type B	▨
1633.01	Temporary Rock Silt Check Type-A	⊗
	Temporary Rock Silt Check Type-A with Matting and Polyacrylamide (PAM)	⊗
1633.02	Temporary Rock Silt Check Type-B	⊗
	Wattle / Coir Fiber Wattle	—
	Wattle / Coir Fiber Wattle with Polyacrylamide (PAM)	—
1634.01	Temporary Rock Sediment Dam Type-A	⊗
1634.02	Temporary Rock Sediment Dam Type-B	⊗
1635.01	Rock Pipe Inlet Sediment Trap Type-A	⊗
1635.02	Rock Pipe Inlet Sediment Trap Type-B	⊗
1630.04	Stilling Basin	⊗
1630.06	Special Stilling Basin	⊗
	Rock Inlet Sediment Trap:	
1632.01	Type A	A
1632.02	Type B	B
1632.03	Type C	C
	Skimmer Basin	⊗
	Tiered Skimmer Basin	⊗
	Infiltration Basin	⊗



THIS PROJECT CONTAINS
EROSION CONTROL PLANS
FOR CLEARING AND
GRUBBING PHASE OF
CONSTRUCTION.

GRAPHIC SCALE



THESE EROSION AND SEDIMENT CONTROL PLANS COMPLY WITH THE REGULATIONS SET FORTH BY THE NCG-010000 GENERAL CONSTRUCTION PERMIT EFFECTIVE AUGUST 1, 2016 AND ISSUED BY THE NORTH CAROLINA DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES DIVISION OF WATER RESOURCES.

Prepared in the Office of:

1520 SOUTH BOULEVARD, SUITE 200
CHARLOTTE, NC 28203
(704) 752-0610

Designed by:

WILL WEATHERSBEE, PE **3161**
NAME LEVEL III CERTIFICATION NO.

Reviewed in the Office of:

ROADSIDE ENVIRONMENTAL UNIT

1 South Wilmington St.
Raleigh, NC 27611

2018 STANDARD SPECIFICATIONS

Reviewed by:

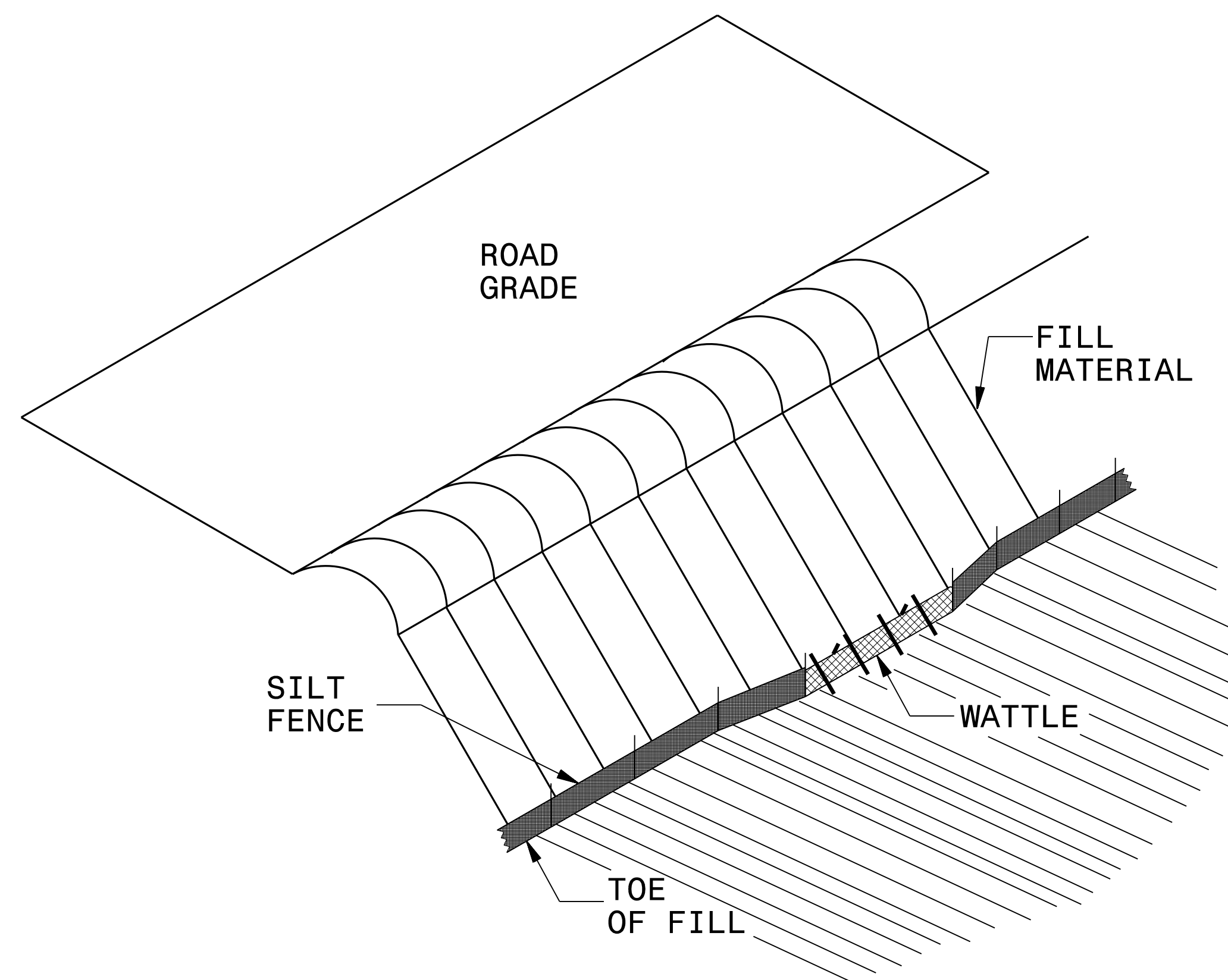
WES CHANDLER, PE

Roadway Standard Drawings

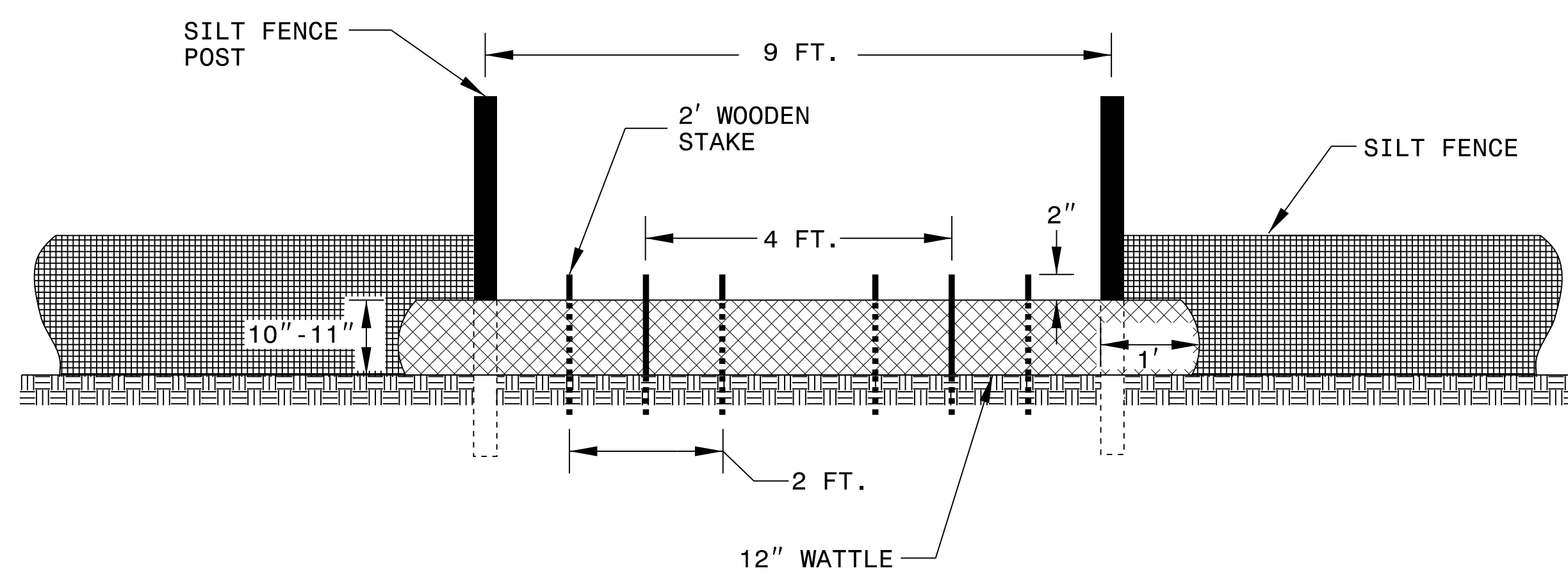
The following roadway english standards as appear in "Roadway Standard Drawings"- Roadway Design Unit - N. C. Department of Transportation - Raleigh, N. C., dated January 2018 and the latest revision thereto are applicable to this project and by reference hereby are considered a part of these plans.

- 1605.01 Temporary Silt Fence
- 1606.01 Special Sediment Control Fence
- 1607.01 Gravel Construction Entrance
- 1622.01 Temporary Berms and Slope Drains
- 1630.06 Special Stilling Basin
- 1631.01 Matting Installation
- 1632.03 Rock Inlet Sediment Trap Type C
- 1633.01 Temporary Rock Silt Check Type A
- 1633.02 Temporary Rock Silt Check Type B

SILT FENCE COIR FIBER WATTLE BREAK DETAIL



ISOMETRIC VIEW

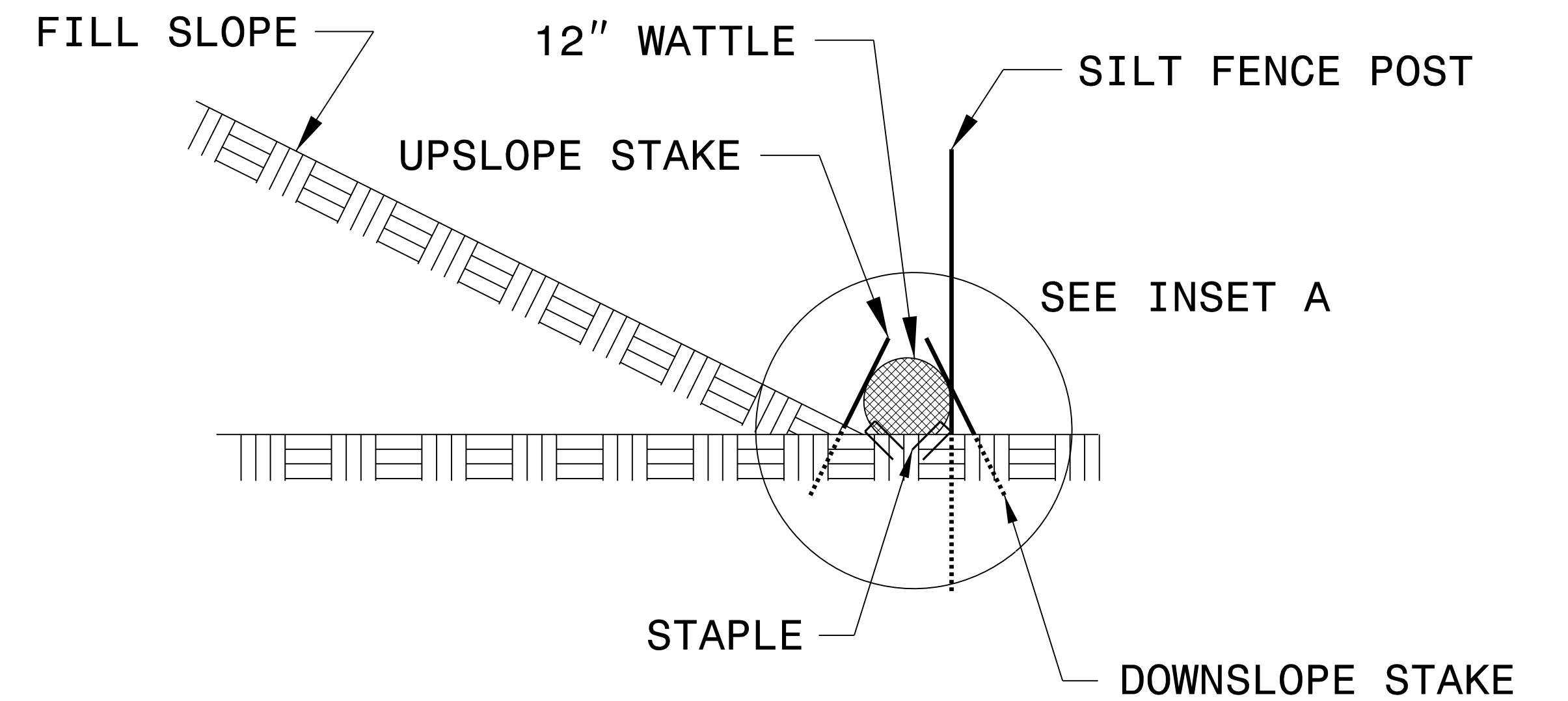
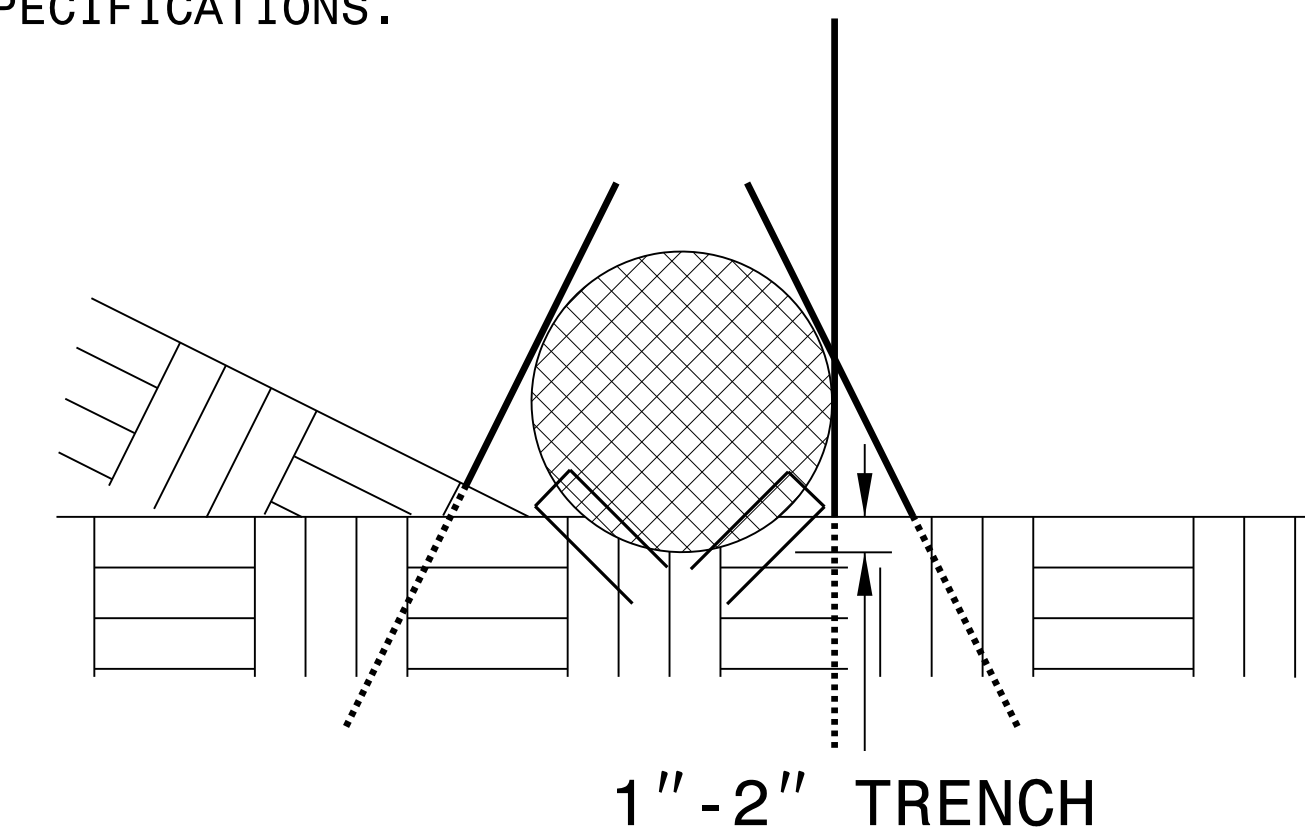


VIEW FROM SLOPE

NOTES:

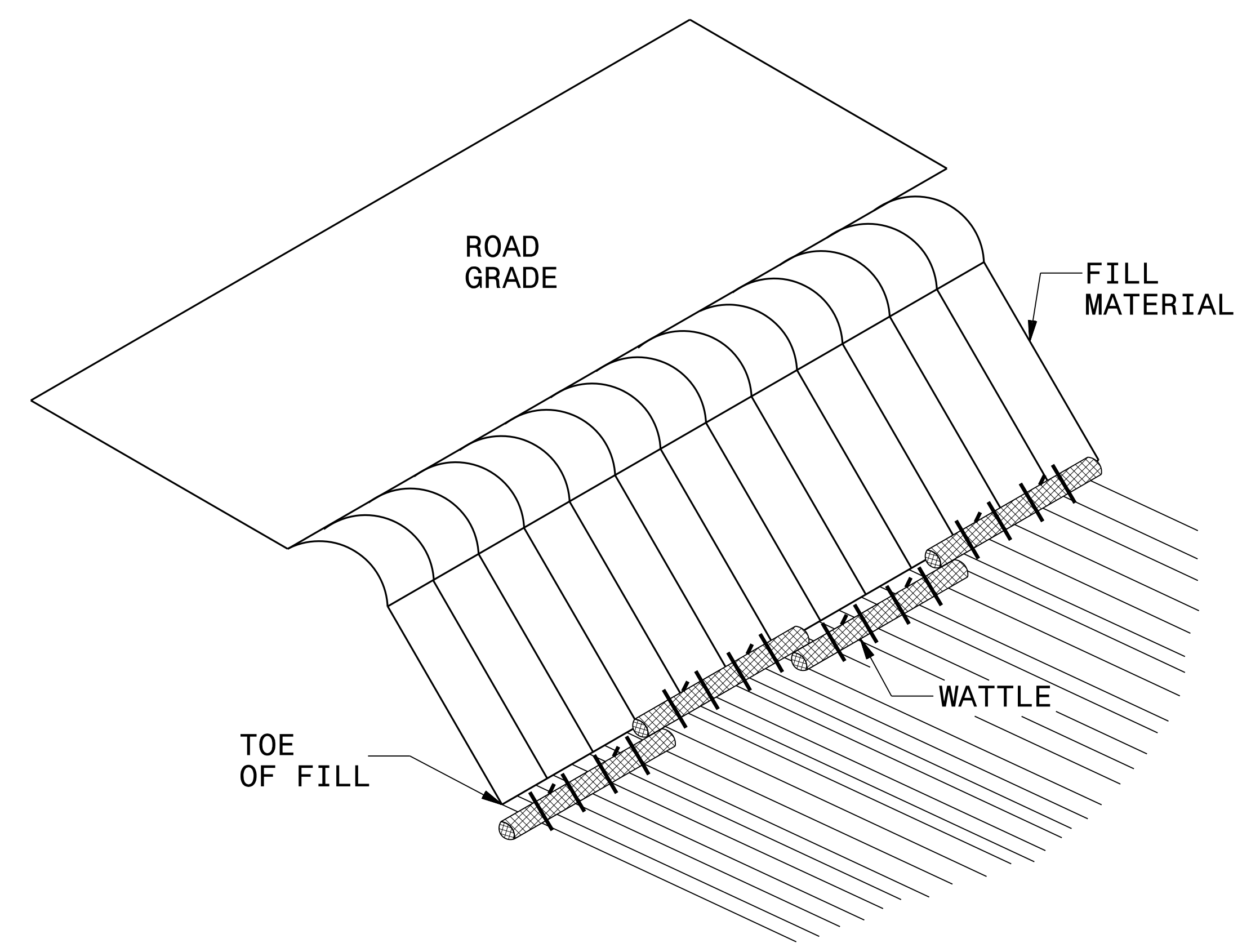
- USE MINIMUM 12 IN. DIAMETER COIR FIBER (COCONUT FIBER) WATTLE AND LENGTH OF 10 FT.
- EXCAVATE A 1 TO 2 INCH TRENCH FOR WATTLE TO BE PLACED.
- DO NOT PLACE WATTLE ON TOE OF SLOPE.
- USE 2 FT. WOODEN STAKES WITH A 2 IN. BY 2 IN. NOMINAL CROSS SECTION.
- INSTALL A MINIMUM OF 2 UPSLOPE STAKES AND 4 DOWNSLOPE STAKES AT AN ANGLE TO WEDGE WATTLE TO GROUND.
- PROVIDE STAPLES MADE OF 0.125 IN. DIAMETER STEEL WIRE FORMED INTO A U SHAPE NOT LESS THAN 12" IN LENGTH.
- INSTALL STAPLES APPROXIMATELY EVERY 1 LINEAR FOOT ON BOTH SIDES OF WATTLE AND AT EACH END TO SECURE IT TO THE SOIL.
- WATTLE INSTALLATION CAN BE ON OUTSIDE OF THE SILT FENCE AS DIRECTED.
- INSTALL TEMPORARY SILT FENCE IN ACCORDANCE WITH SECTION 1605 OF THE STANDARD SPECIFICATIONS.

INSET A



SIDE VIEW

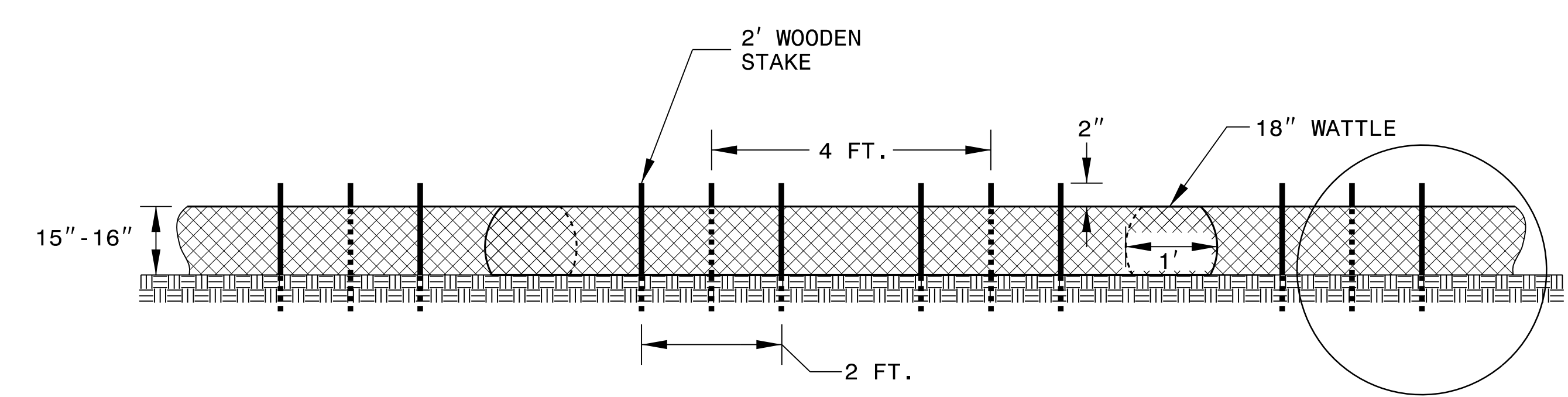
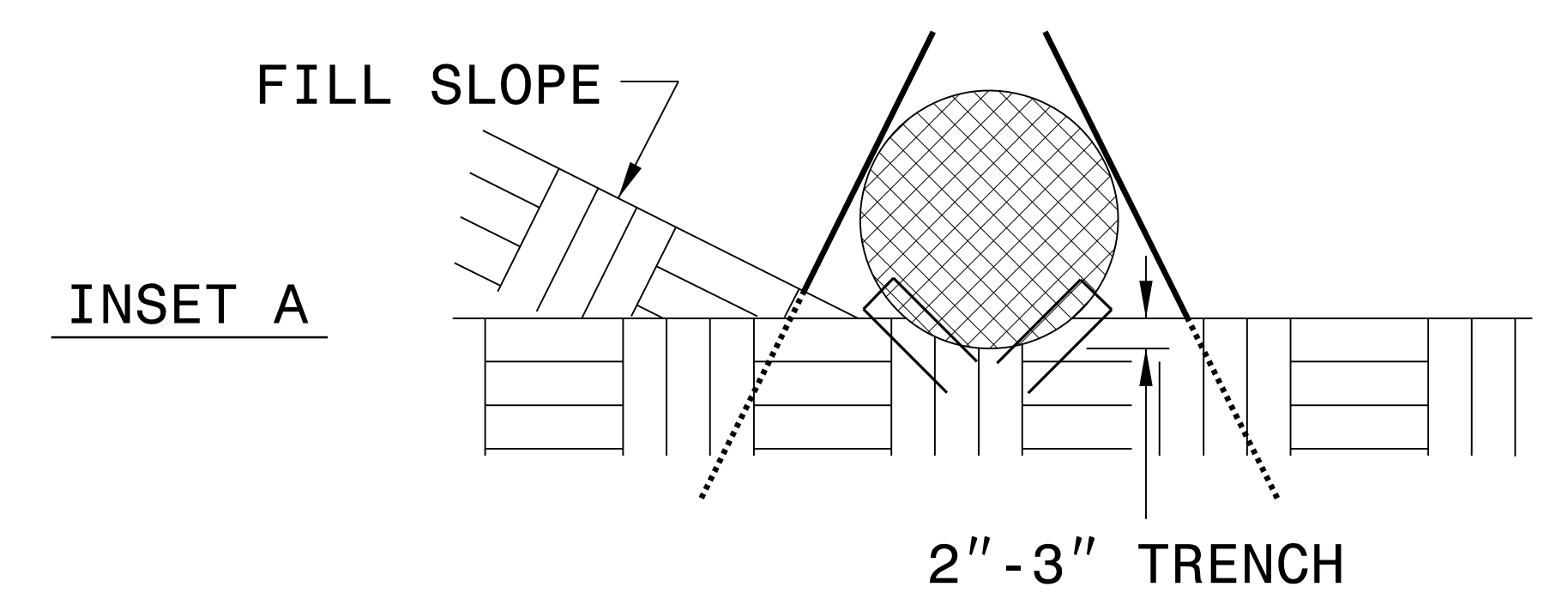
COIR FIBER WATTLE BARRIER DETAIL



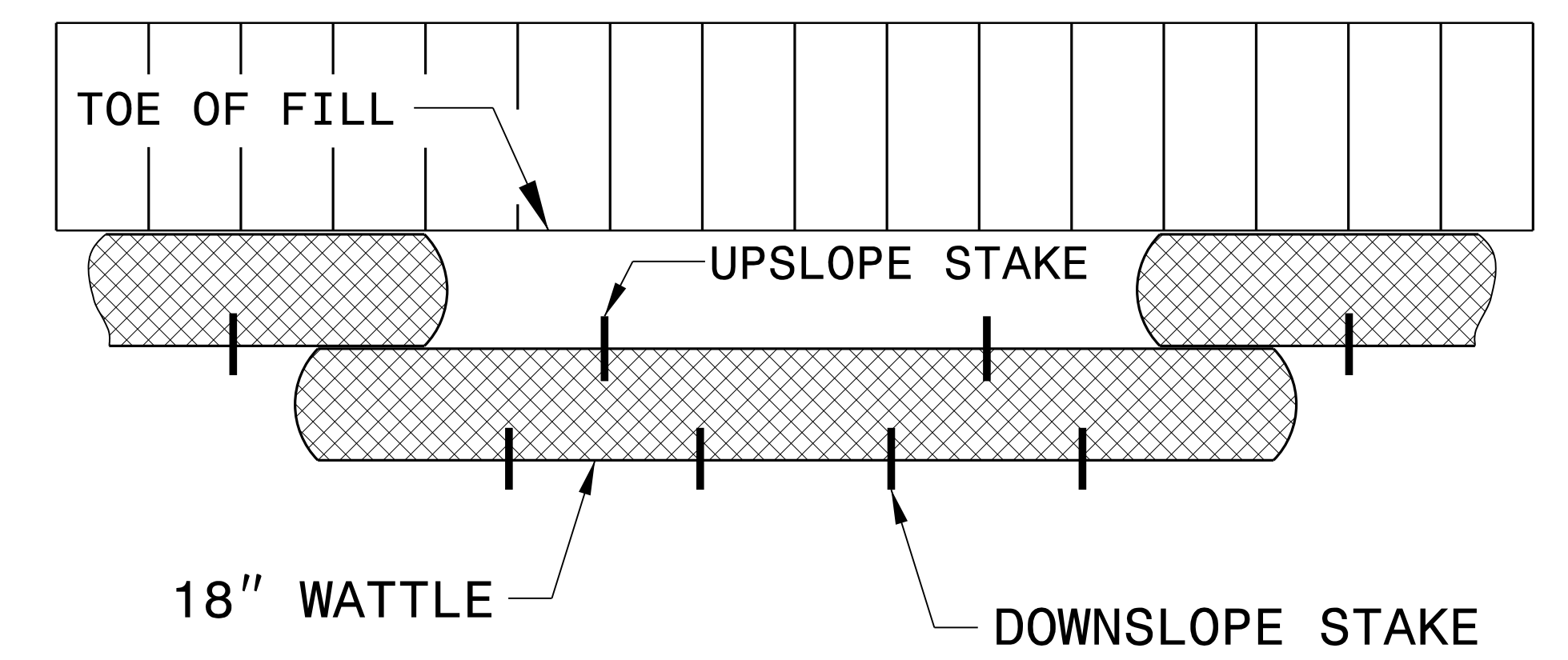
ISOMETRIC VIEW

NOTES:

- USE MINIMUM 18 IN. NOMINAL DIAMETER COIR FIBER (COCONUT) WATTLE AND LENGTH OF 10 FT.
- EXCAVATE A 2 TO 3 INCH TRENCH FOR WATTLE TO BE PLACED.
- DO NOT PLACE WATTLES ON TOE OF SLOPE.
- USE 2 FT. WOODEN STAKES WITH A 2 IN. BY 2 IN. NOMINAL CROSS SECTION.
- INSTALL A MINIMUM OF 2 UPSLOPE STAKES AND 4 DOWNSLOPE STAKES AT AN ANGLE TO WEDGE WATTLE TO GROUND.
- PROVIDE STAPLES MADE OF 0.125 IN. DIAMETER STEEL WIRE FORMED INTO A U SHAPE NOT LESS THAN 12" IN LENGTH.
- INSTALL STAPLES APPROXIMATELY EVERY 1 LINEAR FOOT ON BOTH SIDES OF WATTLE AND AT EACH END TO SECURE IT TO THE SOIL.
- FOR BREAKS ALONG LARGE SLOPES, USE MAXIMUM SPACING OF 25 FT.

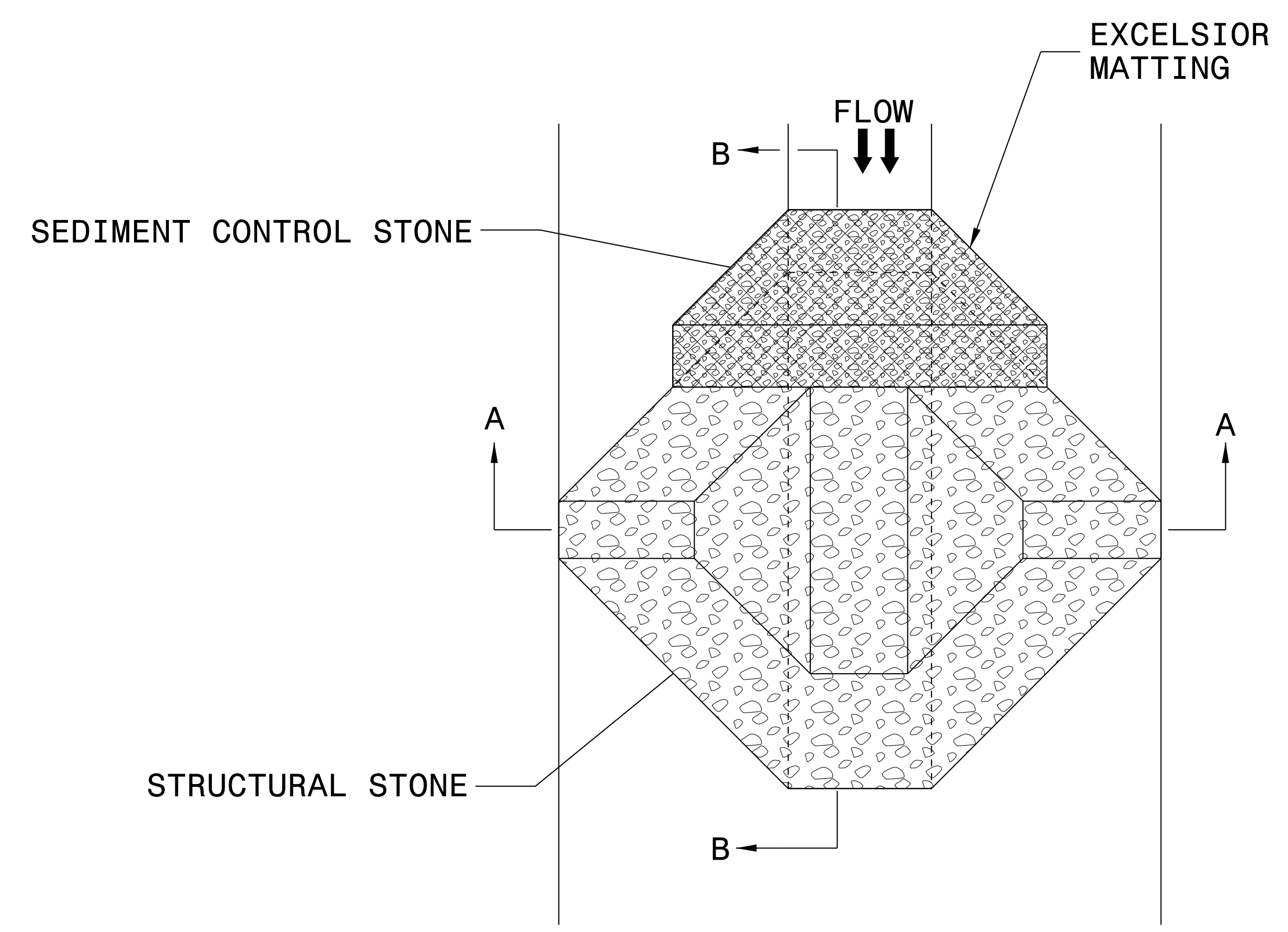


FRONT VIEW



TOP VIEW

TEMPORARY ROCK SILT CHECK TYPE 'A' WITH EXCELSIOR MATTING AND POLYACRYLAMIDE (PAM)



PLAN

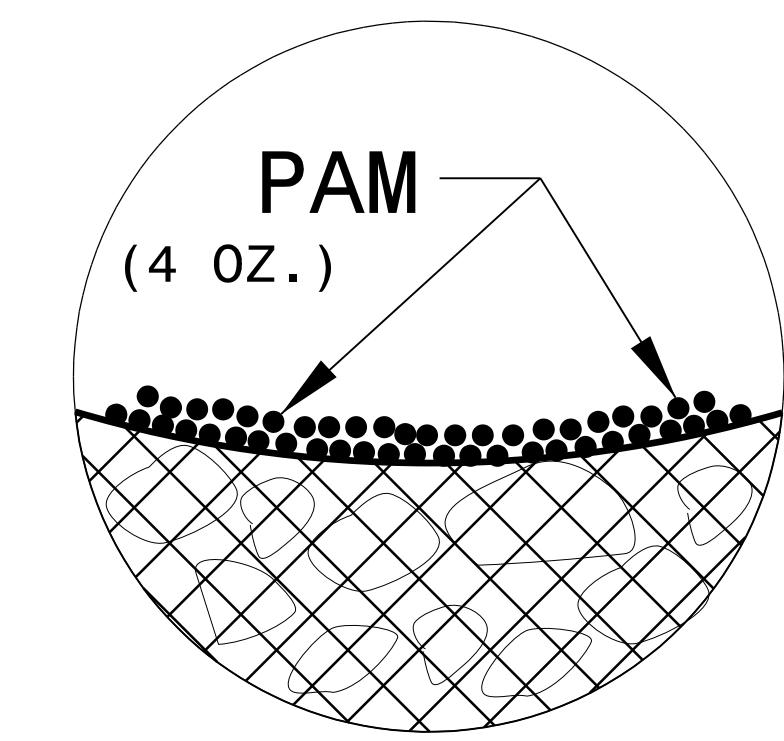
NOTES:

INSTALL TEMPORARY ROCK SILT CHECK TYPE A IN ACCORDANCE WITH ROADWAY STANDARD DRAWING NO. 1633.01.

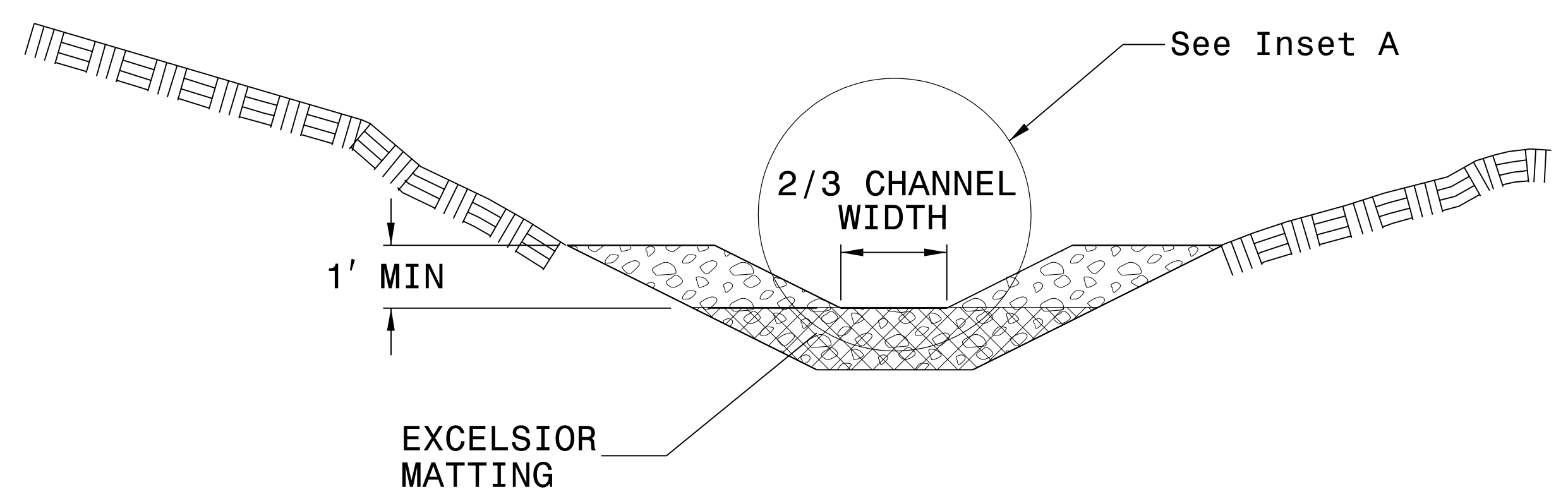
USE EXCELSIOR FOR MATTING MATERIAL AND ANCHOR MATTING SECTION AT TOP AND BOTTOM WITH CLASS B STONE.

PRIOR TO POLYACRYLAMIDE (PAM) APPLICATION, OBTAIN A SOIL SAMPLE FROM PROJECT LOCATION, AND FROM OFFSITE MATERIAL, AND ANALYZE FOR APPROPRIATE PAM FLOCCULANT TO BE APPLIED TO EACH ROCK SILT CHECK.

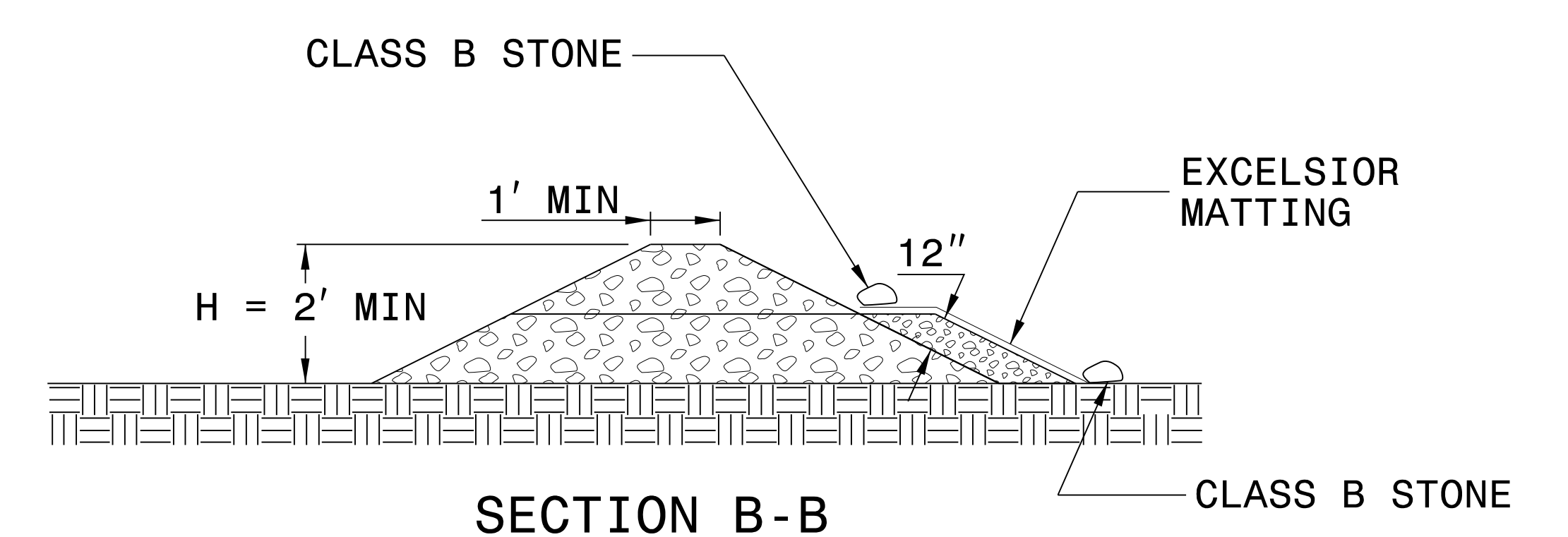
INITIALLY APPLY 4 OUNCES OF POLYACRYLAMIDE (PAM) TO TOP OF MATTING SECTION AND AFTER EVERY RAINFALL EVENT THAT EQUALS OR EXCEEDS 0.50 INCHES.



INSET A



SECTION A-A



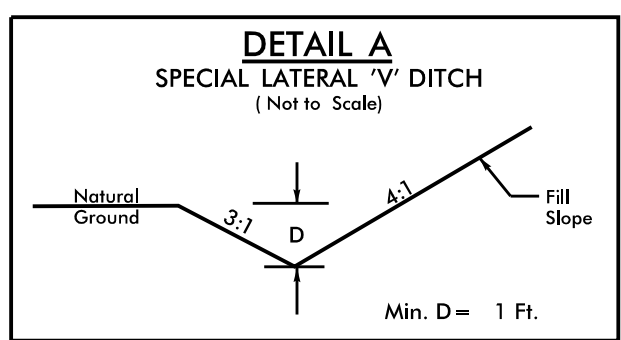
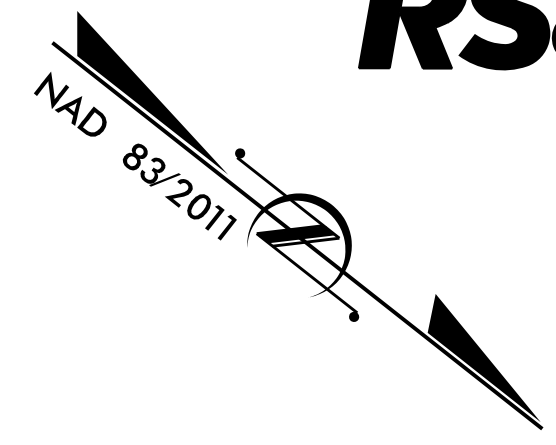
SECTION B-B

NOT TO SCALE

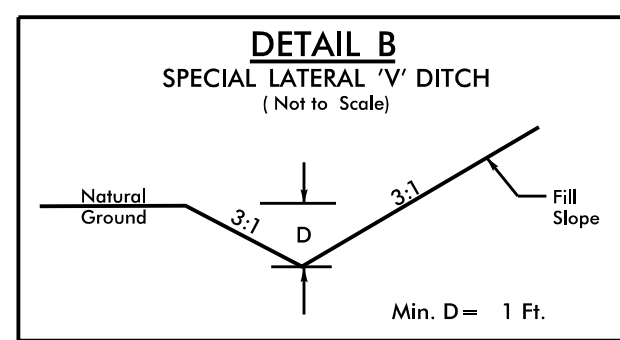
DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

SOIL STABILIZATION TIMEFRAMES

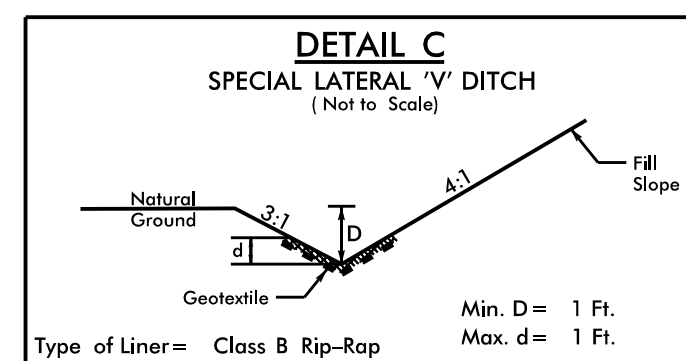
<i>SITE DESCRIPTION</i>	<i>STABILIZATION TIME</i>	<i>TIMEFRAME EXCEPTIONS</i>
PERIMETER DIKES, SWALES, DITCHES AND SLOPES	7 DAYS	NONE
HIGH QUALITY WATER (HQW) ZONES	7 DAYS	NONE
SLOPES STEEPER THAN 3:1	7 DAYS	IF SLOPES ARE 10' OR LESS IN LENGTH AND ARE NOT STEEPER THAN 2:1, 14 DAYS ARE ALLOWED.
SLOPES 3:1 OR FLATTER	14 DAYS	7 DAYS FOR SLOPES GREATER THAN 50' IN LENGTH.
ALL OTHER AREAS WITH SLOPES FLATTER THAN 4:1	14 DAYS	NONE, EXCEPT FOR PERIMETERS AND HQW ZONES.



FROM STA. 12+00 TO STA. 13+00 RT
FROM STA. 18+50 TO STA. 19+00 RT
FROM STA. 12+00 TO STA. 12+86 LT
FROM STA. 19+04 TO STA. 19+95 LT

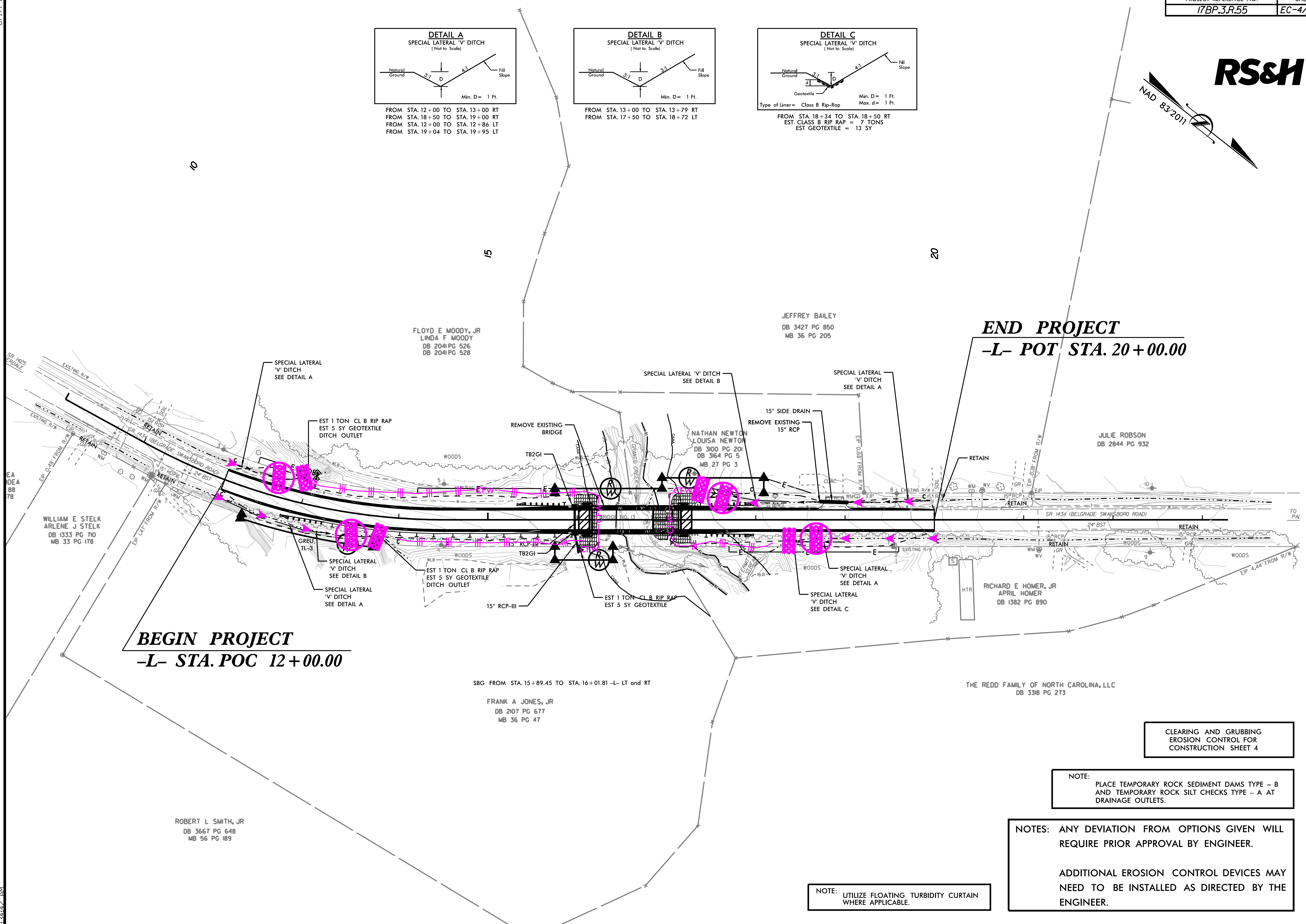


FROM STA. 13+00 TO STA. 13+79 RT
FROM STA. 17+50 TO STA. 18+72 LT



FROM STA. 18+34 TO STA. 18+50 RT
EST. CLASS B RIP RAP = 7 TONS
EST. GEOTEXTILE = 13 SY

8/17/99
EA DEA 88 78
F:\E\2018 Environmental\Design\Plan_Sheets\660013_EC_PSH_EC-4.dgn
11:32:25 AM



WILLIAM E STELK
ARLENE J STELK
DB 1333 PG 710
MB 33 PG 178

ROBERT L SMITH, JR
DB 3667 PG 648
MB 56 PG 189

FLOYD E MOODY, JR
LINDA F MOODY
DB 2041 PG 526
DB 2041 PG 528

SBG FROM STA. 15+89.45 TO STA. 16+01.81 -L- LT and RT

FRANK A JONES, JR
DB 2107 PG 677
MB 36 PG 47

JEFFREY BAILEY
DB 3427 PG 850
MB 36 PG 205

NATHAN NEWTON
LOUISA NEWTON
DB 3100 PG 201
DB 3164 PG 5
MB 27 PG 3

JULIE ROBSON
DB 2844 PG 932

RICHARD E HOMER, JR
APRIL HOMER
DB 1382 PG 890

THE REDD FAMILY OF NORTH CAROLINA, LLC
DB 3318 PG 273

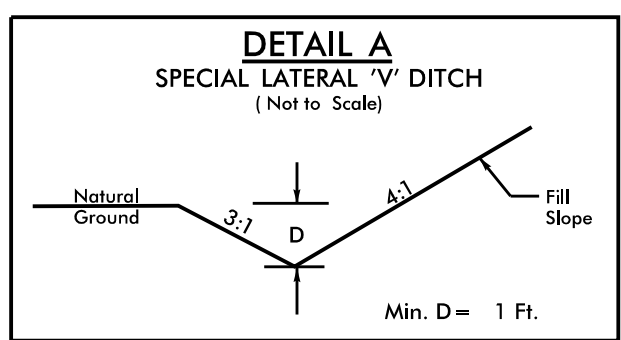
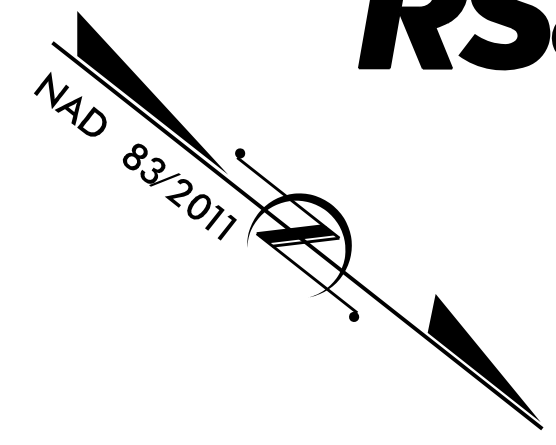
CLEARING AND GRUBBING
EROSION CONTROL FOR
CONSTRUCTION SHEET 4

NOTE:
PLACE TEMPORARY ROCK SEDIMENT DAMS TYPE - B
AND TEMPORARY ROCK SILT CHECKS TYPE - A AT
DRAINAGE OUTLETS.

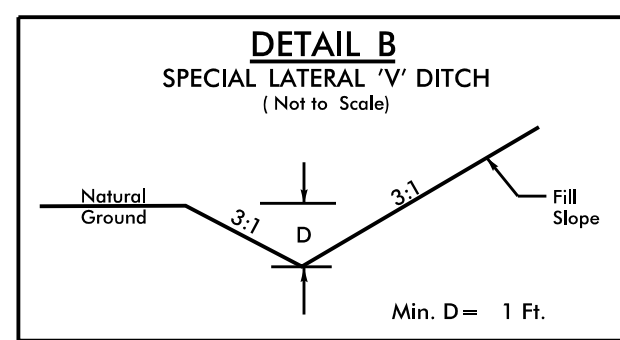
NOTES: ANY DEVIATION FROM OPTIONS GIVEN WILL
REQUIRE PRIOR APPROVAL BY ENGINEER.

ADDITIONAL EROSION CONTROL DEVICES MAY
NEED TO BE INSTALLED AS DIRECTED BY THE
ENGINEER.

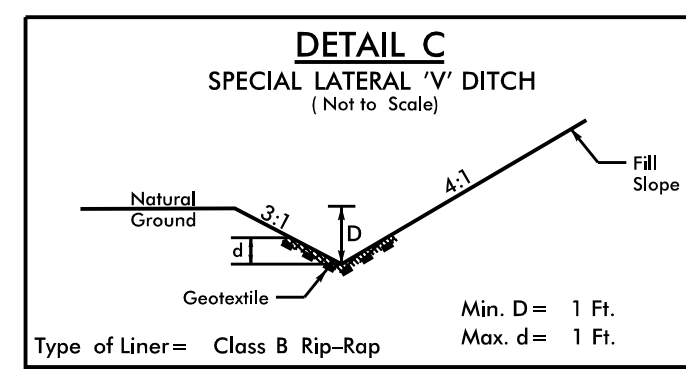
NOTE: UTILIZE FLOATING TURBIDITY CURTAIN
WHERE APPLICABLE.



FROM STA. 12+00 TO STA. 13+00 RT
 FROM STA. 18+50 TO STA. 19+00 RT
 FROM STA. 12+00 TO STA. 12+86 LT
 FROM STA. 19+04 TO STA. 19+95 LT



FROM STA. 13+00 TO STA. 13+79 RT
 FROM STA. 17+50 TO STA. 18+72 LT



FROM STA. 18+34 TO STA. 18+50 RT
 EST. CLASS B RIP RAP = 7 TONS
 EST. GEOTEXTILE = 13 SY

INSTALL 70 SY MATTING FOR EROSION CONTROL IN THE PROPOSED DITCH LINE.
 FROM STA. 12+00 TO 12+86 LT

INSTALL 245 SY MATTING FOR EROSION CONTROL IN THE PROPOSED DITCH LINE.
 FROM STA. 17+50 TO 18+72 LT

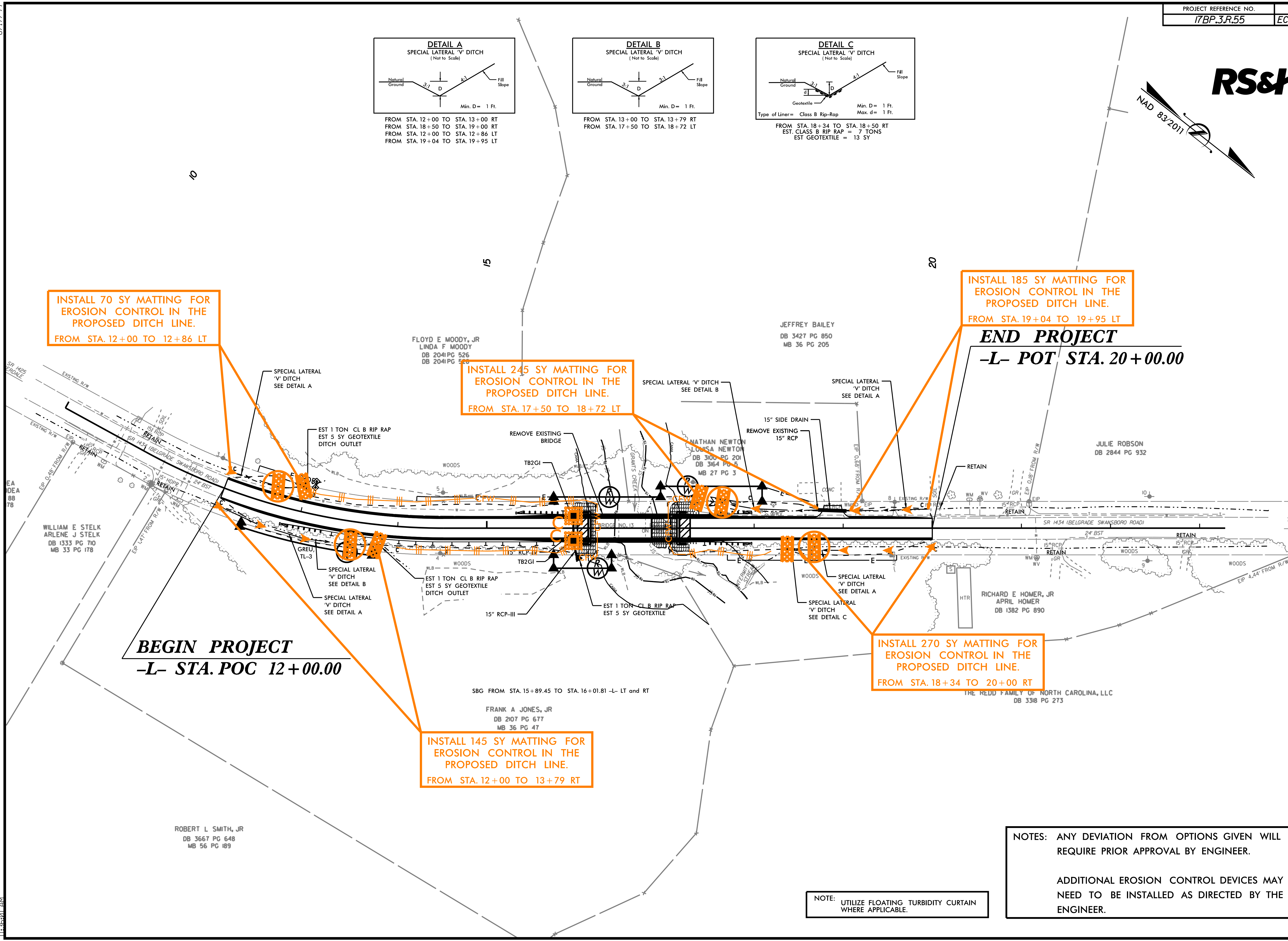
INSTALL 185 SY MATTING FOR EROSION CONTROL IN THE PROPOSED DITCH LINE.
 FROM STA. 19+04 TO 19+95 LT

INSTALL 270 SY MATTING FOR EROSION CONTROL IN THE PROPOSED DITCH LINE.
 FROM STA. 18+34 TO 20+00 RT

INSTALL 145 SY MATTING FOR EROSION CONTROL IN THE PROPOSED DITCH LINE.
 FROM STA. 12+00 TO 13+79 RT

END PROJECT
 -L- POT STA. 20+00.00

BEGIN PROJECT
 -L- STA. POC 12+00.00



NOTES: ANY DEVIATION FROM OPTIONS GIVEN WILL REQUIRE PRIOR APPROVAL BY ENGINEER.

ADDITIONAL EROSION CONTROL DEVICES MAY NEED TO BE INSTALLED AS DIRECTED BY THE ENGINEER.

NOTE: UTILIZE FLOATING TURBIDITY CURTAIN WHERE APPLICABLE.

8/17/09
 EA DEA 88 78
 WILLIAM E STELK ARLENE J STELK DB 1333 PG 710 MB 33 PG 178
 ROBERT L SMITH, JR DB 3667 PG 648 MB 56 PG 189
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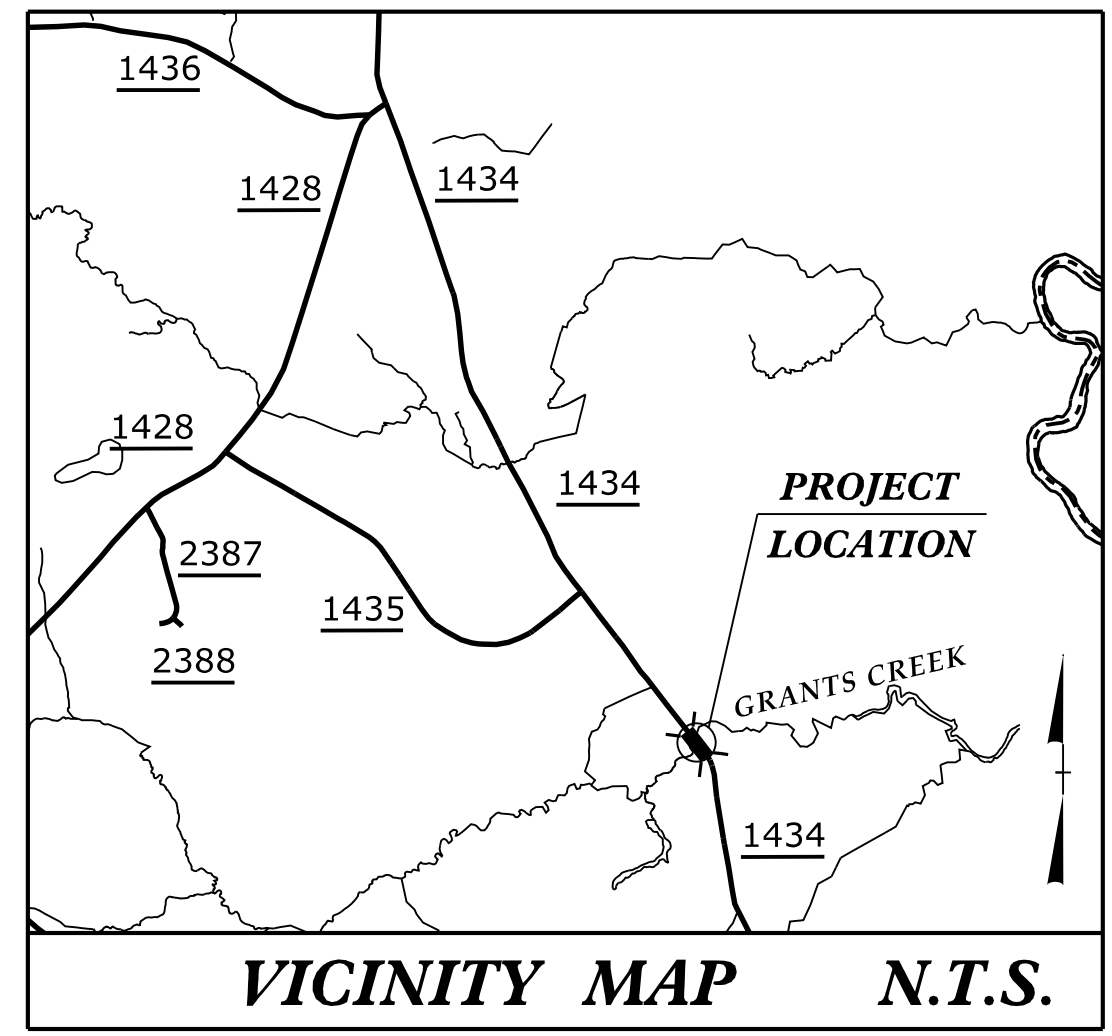
09/08/99

TIP PROJECT: 17BP.3.R.55

T.I.P. NO.	SHEET NO.
17BP.3.R.55	UC-1

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

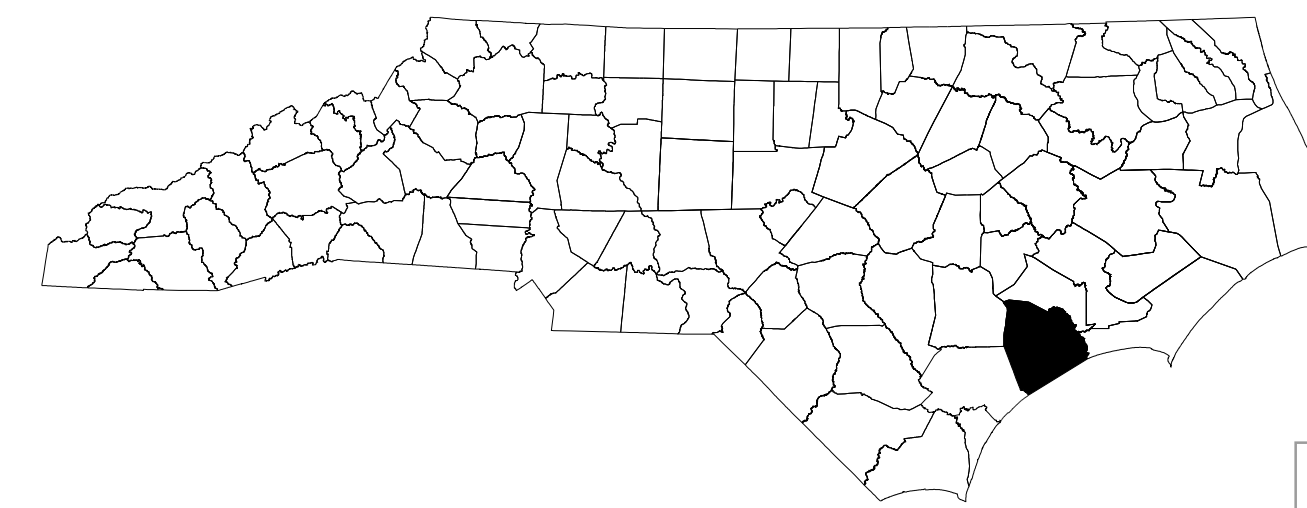
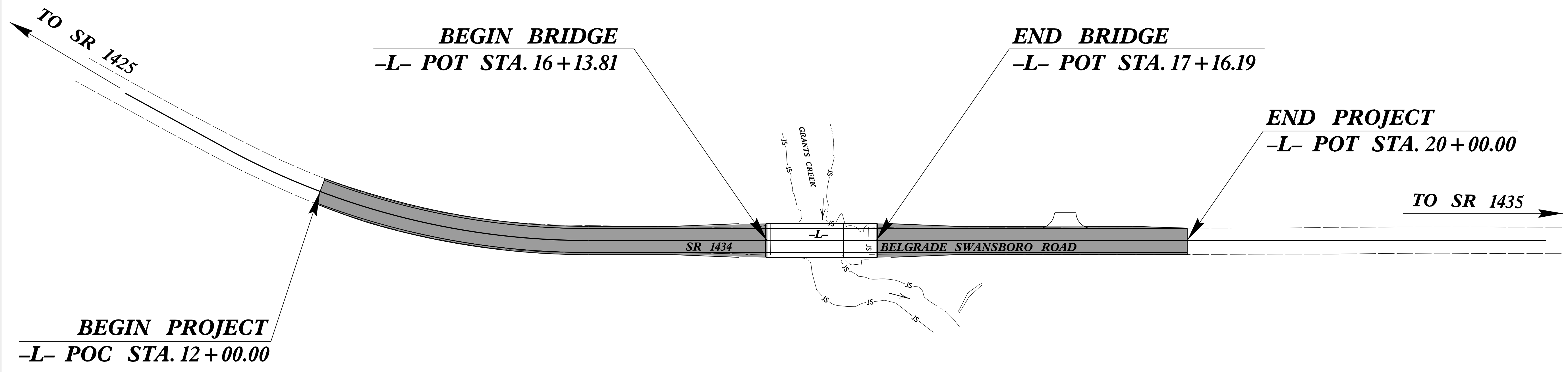
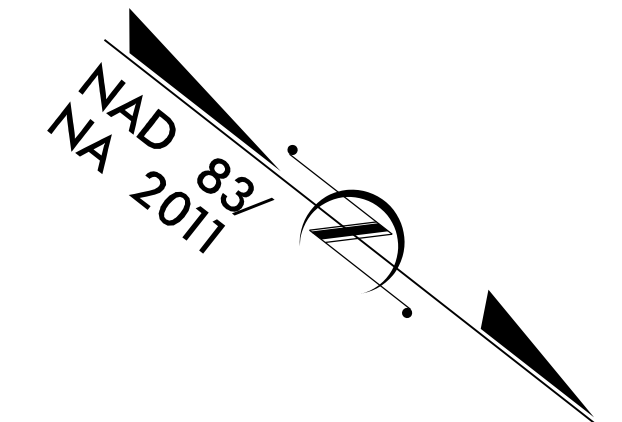
**UTILITY CONSTRUCTION PLANS
ONSLOW COUNTY**



UC PLANS

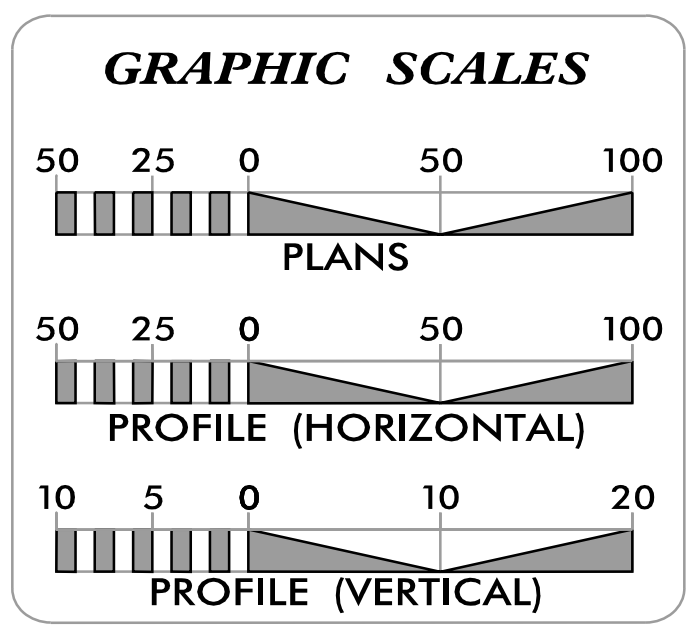
**LOCATION: BRIDGE NO. 13 OVER GRANTS CREEK
ON SR 1434 (BELGRADE SWANSBORO ROAD)**

TYPE OF WORK: WATER LINE RELOCATION



RS&H
DOCUMENT NOT CONSIDERED FINAL
UNTIL ALL SIGNATURES ARE COMPLETED

23-APR-2018 11:38
R:\Utilities\Water_Line\Design\660013_Rdy_tsh.dgn
\$\$\$\$\$SERNAME\$\$\$\$\$

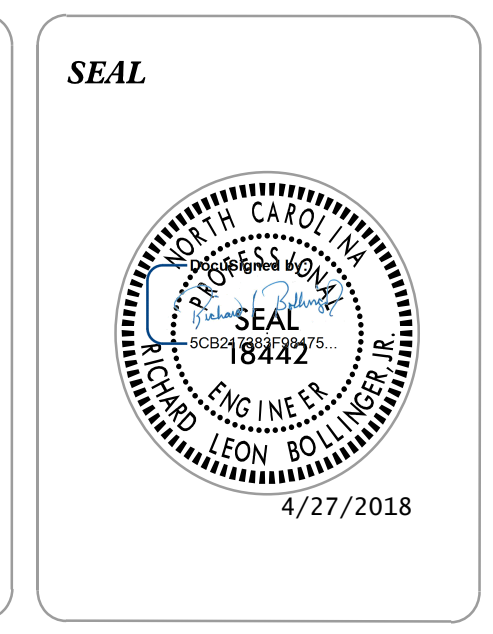


INDEX OF SHEETS

SHEET NO.:	DESCRIPTION:
UC-1	TITLE SHEET
UC-2	UTILITY SYMBOLOGY
UC-3	NOTES
UC-3A TO UC-3D	DETAILS
UC-4	UTILITY CONSTRUCTION SHEET AND PROFILE SHEET

WATER AND SEWER OWNERS ON PROJECT

(A) ONWASA



PREPARED IN THE OFFICE OF
RS&H
ARCHITECTS-ENGINEERS-PLANNERS, INC.
8521 SIX FORKS ROAD, SUITE 400
RALEIGH, NC 27615

RICHARD BOLLINGER, PE
PROJECT ENGINEER

CHARLES YOUNG, PE
PROJECT DESIGN ENGINEER

AL EDGERTON
NCDOT CONTACT

STATE OF NORTH CAROLINA DIVISION OF HIGHWAYS

UTILITIES PLAN SHEET SYMBOLS

PROPOSED WATER SYMBOLS

Table listing proposed water symbols including Water Line (Sized as Shown), various Degree Bends (11 1/4, 22 1/2, 45, 90), Plug, Tee, Cross, Reducer, Gate Valve, Butterfly Valve, Tapping Valve, Line Stop, Line Stop with Bypass, Blow Off, Fire Hydrant, Relocate Fire Hydrant, Remove Fire Hydrant, Water Meter, Relocate Water Meter, Remove Water Meter, Water Pump Station, RPZ Backflow Preventer, DCV Backflow Preventer, Relocate RPZ Backflow Preventer, Relocate DCV Backflow Preventer.

PROPOSED SEWER SYMBOLS

Table listing proposed sewer symbols including Gravity Sewer Line (Sized as Shown), Force Main Sewer Line (Sized as Shown), Manhole (Sized per Note), Sewer Pump Station.

PROPOSED MISCELLANEOUS UTILITIES SYMBOLS

Table listing proposed miscellaneous utilities symbols including Power Pole, Telephone Pole, Joint Use Pole, Telephone Pedestal, Utility Line by Others (Type as Shown), Trenchless Installation, Encasement by Open Cut, Encasement.

Table listing proposed miscellaneous utilities symbols including Thrust Block, Air Release Valve, Utility Vault, Concrete Pier, Steel Pier, Plan Note, Pay Item Note.

EXISTING UTILITIES SYMBOLS

Table listing existing utilities symbols including Power Pole, Telephone Pole, Joint Use Pole, Utility Pole, Utility Pole with Base, H-Frame Pole, Power Transmission Line Tower, Water Manhole, Power Manhole, Telephone Manhole, Sanitary Sewer Manhole, Hand Hole for Cable, Power Transformer, Telephone Pedestal, CATV Pedestal, Gas Valve, Gas Meter, Located Miscellaneous Utility Object, Abandoned According to Utility Records (AATUR), End of Information (E.O.I.), and various underground and aboveground utility lines (Power, Telephone, Fiber Optics, TV, Gas, Water, Gravity Sanitary Sewer, SS Forced Main).

*For Existing Utilities Utility Line Drawn from Record (Type as Shown) Designated Utility Line (Type as Shown)

23-AUG-2017 13:32 R:\Utilities\Water Line\SF-660013_Ut_UC_symb notes det.s.dgn

PROJECT REFERENCE NO.	SHEET NO.
17BP.3.R.55	UC-3
DESIGNED BY: ARV	
DRAWN BY: ARV	
CHECKED BY: RLB	
APPROVED BY:	
REVISED:	
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION	UTILITIES ENGINEERING SEC. PHONE: (919) 707-6690 FAX: (919) 250-4151

UTILITY CONSTRUCTION

GENERAL NOTES:

1. THE PROPOSED UTILITY CONSTRUCTION SHALL MEET THE APPLICABLE REQUIREMENTS OF THE NC DEPARTMENT OF TRANSPORTATION'S "STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES" DATED JANUARY 2018 AND THE ONSLOW WATER AND SEWER AUTHORITY (ONWASA) MANUAL OF STANDARDS, SPECIFICATIONS AND DETAILS DATED MAY 19, 2016.
2. THE EXISTING UTILITIES BELONG TO ONWASA .
3. ALL WATER LINES TO BE INSTALLED WITHIN COMPLIANCE OF THE RULES AND REGULATIONS OF THE NORTH CAROLINA DEPARTMENT OF ENVIRONMENTAL QUALITY, DIVISION OF WATER RESOURCES, PUBLIC WATER SUPPLY SECTION. ALL SEWER LINES TO BE INSTALLED WITHIN COMPLIANCE OF THE RULES AND REGULATIONS OF THE NORTH CAROLINA DEPARTMENT OF ENVIRONMENT QUALITY, DIVISION OF WATER RESOURCES, WATER QUALITY SECTION. PERFORM ALL WORK IN ACCORDANCE WITH THE APPLICABLE PLUMBING CODES.
4. THE UTILITY OWNER OWNS THE EXISTING UTILITY FACILITIES AND WILL OWN THE NEW UTILITY FACILITIES AFTER ACCEPTANCE BY THE DEPARTMENT. THE DEPARTMENT OWNS THE CONSTRUCTION CONTRACT AND HAS ADMINISTRATIVE AUTHORITY. COMMUNICATIONS AND DECISIONS BETWEEN THE CONTRACTOR AND UTILITY OWNER ARE NOT BINDING UPON THE DEPARTMENT OR THIS CONTRACT UNLESS AUTHORIZED BY THE ENGINEER. AGREEMENTS BETWEEN THE UTILITY OWNER AND CONTRACTOR FOR THE WORK THAT IS NOT PART OF THIS CONTRACT OR IS SECONDARY TO THIS CONTRACT ARE ALLOWED, BUT ARE NOT BINDING UPON THE DEPARTMENT.
5. PROVIDE ACCESS FOR THE DEPARTMENT PERSONNEL AND THE OWNER'S REPRESENTATIVES TO ALL PHASES OF CONSTRUCTION. NOTIFY DEPARTMENT PERSONNEL AND THE UTILITY OWNER TWO WEEKS PRIOR TO COMMENCEMENT OF ANY WORK AND ONE WEEK PRIOR TO SERVICE INTERRUPTION. KEEP UTILITY OWNERS' REPRESENTATIVES INFORMED OF WORK PROGRESS AND PROVIDE OPPORTUNITY FOR INSPECTION OF CONSTRUCTION AND TESTING.

6. THE PLANS DEPICT THE BEST AVAILABLE INFORMATION FOR THE LOCATION, SIZE, AND TYPE OF MATERIAL FOR ALL EXISTING UTILITIES. MAKE INVESTIGATIONS FOR DETERMINING THE EXACT LOCATION, SIZE, AND TYPE MATERIAL OF THE EXISTING FACILITIES AS NECESSARY FOR THE CONSTRUCTION OF THE PROPOSED UTILITIES AND FOR AVOIDING DAMAGE TO EXISTING FACILITIES. REPAIR ANY DAMAGE INCURRED TO EXISTING FACILITIES TO THE ORIGINAL OR BETTER CONDITION AT NO ADDITIONAL COST TO THE DEPARTMENT.
7. MAKE FINAL CONNECTIONS OF THE NEW WORK TO THE EXISTING SYSTEM WHERE INDICATED ON THE PLANS, AS REQUIRED TO FIT THE ACTUAL CONDITIONS, OR AS DIRECTED.
8. MAKE CONNECTIONS BETWEEN EXISTING AND PROPOSED UTILITIES AT TIMES MOST CONVENIENT TO THE PUBLIC, WITHOUT ENDANGERING THE UTILITY SERVICE, AND IN ACCORDANCE WITH THE UTILITY OWNER'S REQUIREMENTS. MAKE CONNECTIONS ON WEEKENDS, AT NIGHT, AND ON HOLIDAYS IF NECESSARY.
9. ALL UTILITY MATERIALS SHALL BE APPROVED PRIOR TO DELIVERY TO THE PROJECT. SEE 1500-7, " SUBMITTALS AND RECORDS" IN SECTION 1500 OF THE STANDARD SPECIFICATIONS.

PROJECT SPECIFIC NOTES:

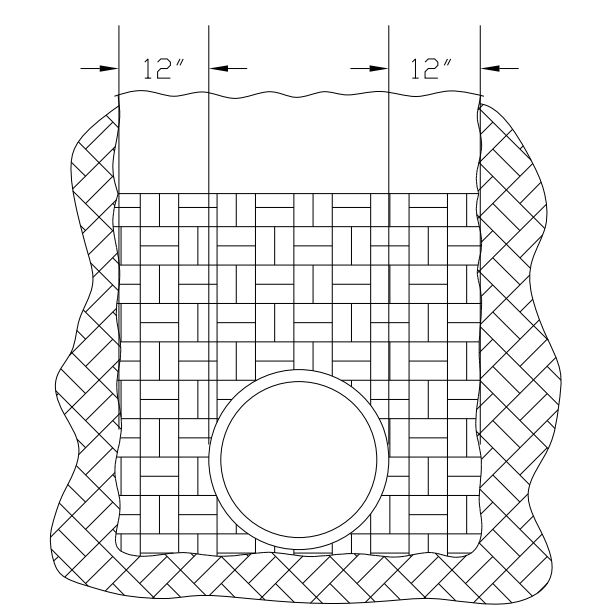
1. ALL PROPOSED WATER LINE SHALL BE D.I.R.J. (DUCTILE IRON RESTRAINED JOINT) PIPE.
2. THE EXISTING WATER LINE IS TO BE REMOVED WHERE RELOCATIONS ARE PROPOSED.
3. THE CONTRACTOR SHALL NOTIFY THE ENGINEER AND OWNER A MINIMUM OF 7 DAYS IN ADVANCE OF A PLANNED SERVICE INTERRUPTION. THE ONWASA POINT OF CONTACT TO SCHEDULE SERVICE INTERRUPTIONS IS MATTHEW PADGETT, DISTRIBUTION SUPERINTENDENT AT (910) 937-7559.

UTILITY CONSTRUCTION

PROJECT REFERENCE NO.	SHEET NO.
17BP.3.R.55	UC-3A
DESIGNED BY: ARV	
DRAWN BY: ARV	
CHECKED BY: RLB	
APPROVED BY:	
REVISED:	
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION	
UTILITIES ENGINEERING SEC. PHONE: (919) 707-6690 FAX: (919) 250-4151	UTILITY CONSTRUCTION PLANS ONLY

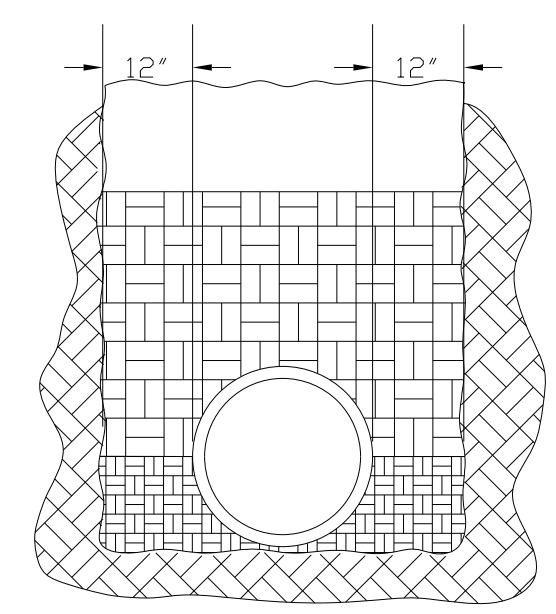
PROJECT TYPICAL DETAILS

UTILITY CONSTRUCTION



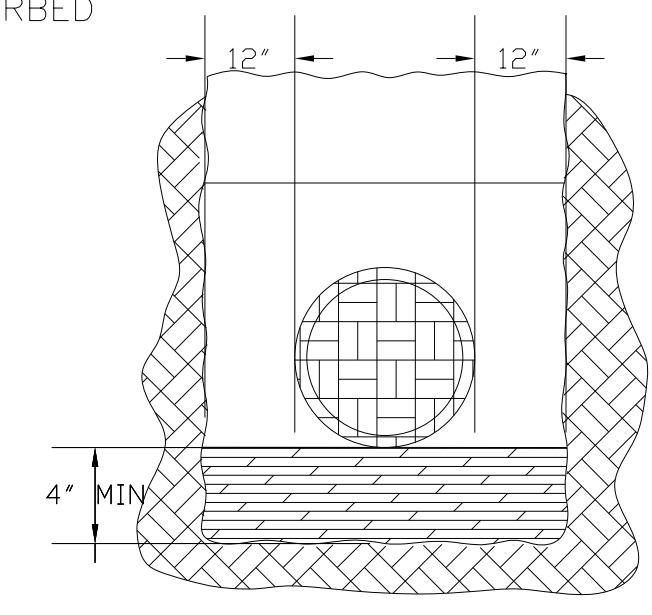
TYPE 1

(NOTE 1)
 FLAT BOTTOM TRENCH WITH LOOSE DIRT
 (FLAT BOTTOM IS DEFINED AS UNDISTURBED EARTH)



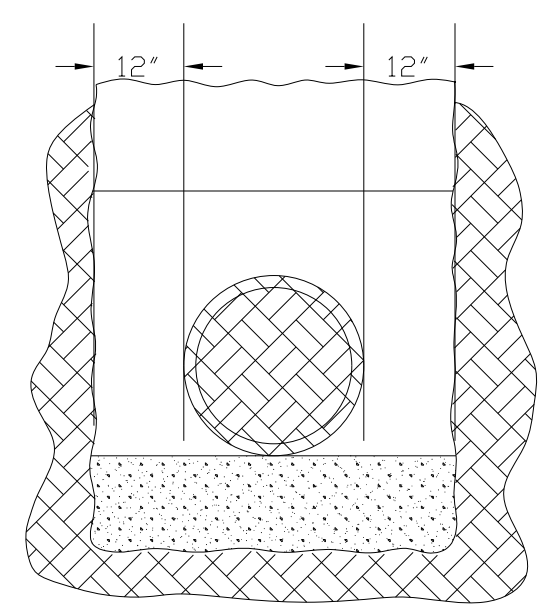
TYPE 2

FLAT BOTTOM TRENCH WITH BACKFILL LIGHTLY CONSOLIDATED TO CENTERLINE OF PIPE
 (FLAT BOTTOM IS DEFINED AS UNDISTURBED EARTH)



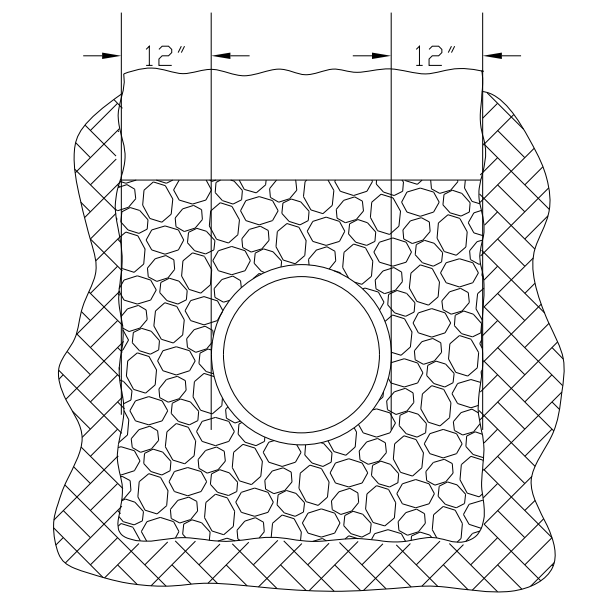
TYPE 3

PIPE BEDDED IN 4" MINIMUM LOOSE SOIL WITH BACKFILL LIGHTLY CONSOLIDATED TO TOP OF PIPE
 (LOOSE SOIL IS DEFINED AS NATIVE SOIL EXCAVATED FROM THE TRENCH, FREE OF ROCK, ORGANIC MATERIAL, FOREIGN MATERIALS AND FROZEN EARTH.)



TYPE 4

PIPE BEDDED IN SAND, GRAVEL, OR CRUSHED STONE TO A DEPTH OF 1/8 PIPE DIAMETER, 4" MINIMUM WITH BACKFILL COMPACTED TO TOP OF PIPE.
 (APPROXIMATELY 80 PERCENT STANDARD PROCTOR, AASHTO T-99)

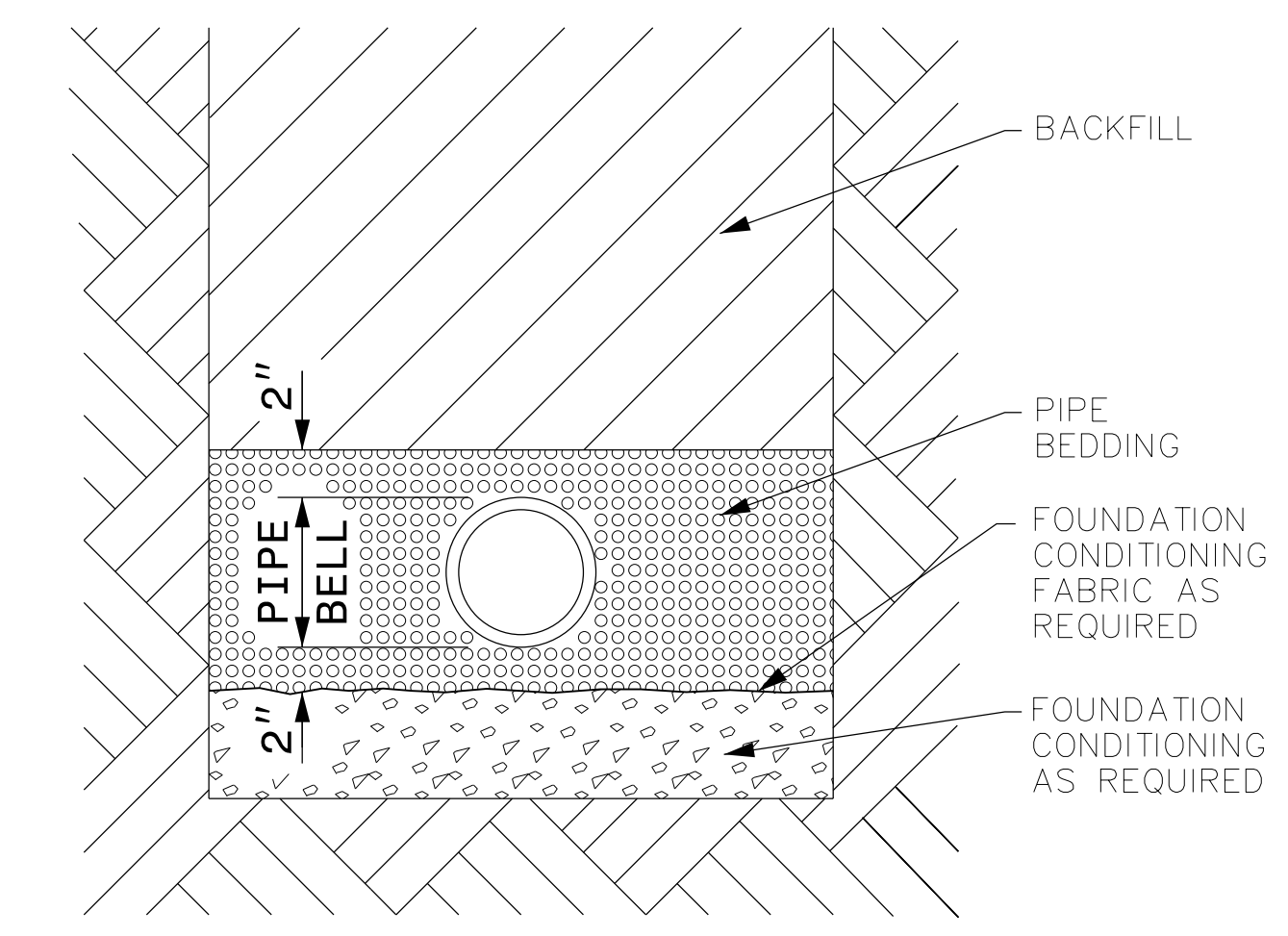


TYPE 5

PIPE BEDDED TO ITS CENTERLINE IN COMPACTED GRANULAR MATERIAL, 4" MINIMUM UNDER PIPE. COMPACTED GRANULAR OR SELECT MATERIAL TO TOP OF PIPE. (APPROXIMATELY 90 PERCENT STANDARD PROCTOR, AASTO T-99)
 (SELECT MATERIAL IS DEFINED AS NATIVE SOIL EXCAVATED FROM THE TRENCH, FREE OF ROCKS, ORGANIC MATERIAL, FOREIGN MATERIALS AND FROZEN EARTH)

NOTES:

- FOR NORMAL PIPE SIZES 14 INCH AND LARGER, CONSIDERATION SHOULD BE GIVEN TO THE USE OF LAYING CONDITIONS OTHER THAN TYPE 1.
- CONSIDERATION OF THE PIPE-ZONE EMBEDMENT CONDITIONS INCLUDED IN THIS FIGURE MAY BE INFLUENCED BY FACTORS OTHER THAN PIPE STRENGTH. FOR ADDITIONAL INFORMATION ON PIPE BEDDING AND BACKFILL, SEE ANSI/AWWA C600.



PLACE FOUNDATION CONDITIONING MATERIAL BELOW BEDDING IF REQUIRED, AS DIRECTED BY ENGINEER. PIPE BEDDED IN SELECT MATERIAL, CLASS II (TYPE 1) OR CLASS III. TRENCH BACKFILLED IN LOOSE 6" LAYERS COMPACTED TO TOP OF TRENCH USING LOCAL EXCAVATED MATERIAL IF APPROVED BY THE ENGINEER, OR SELECT MATERIAL. ALL MATERIAL SHALL BE FREE OF ROCKS, FOREIGN MATERIAL, AND FROZEN EARTH. COMPACTION SHALL BE TO APPROXIMATELY 95% DENSITY IN ACCORDANCE WITH AASHTO T-99 AS MODIFIED BY THE DEPARTMENT OF TRANSPORTATION.

GENERAL TRENCH DETAIL

NOT TO SCALE

STANDARD PIPE BEDDING DETAILS

NOT TO SCALE

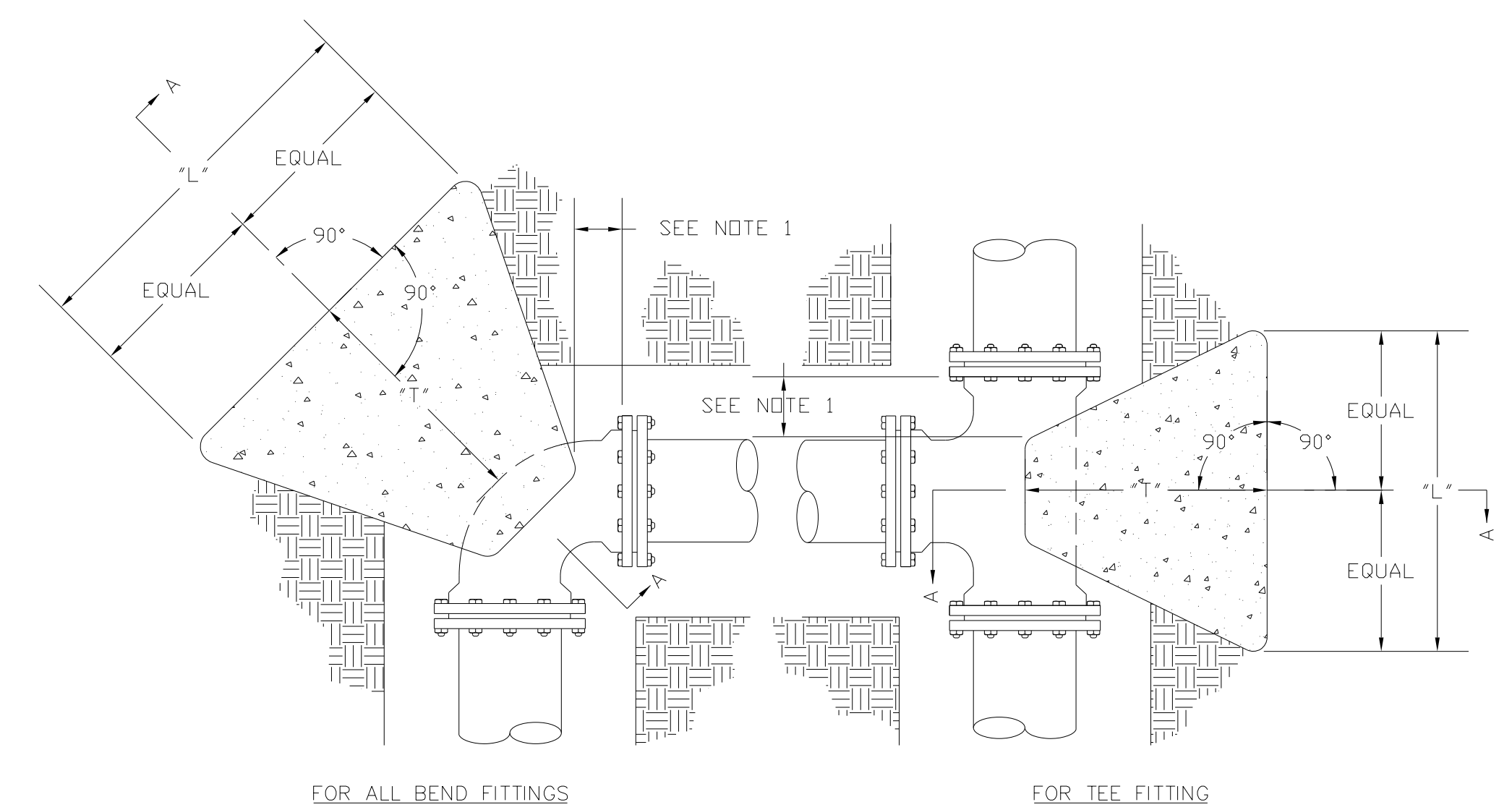
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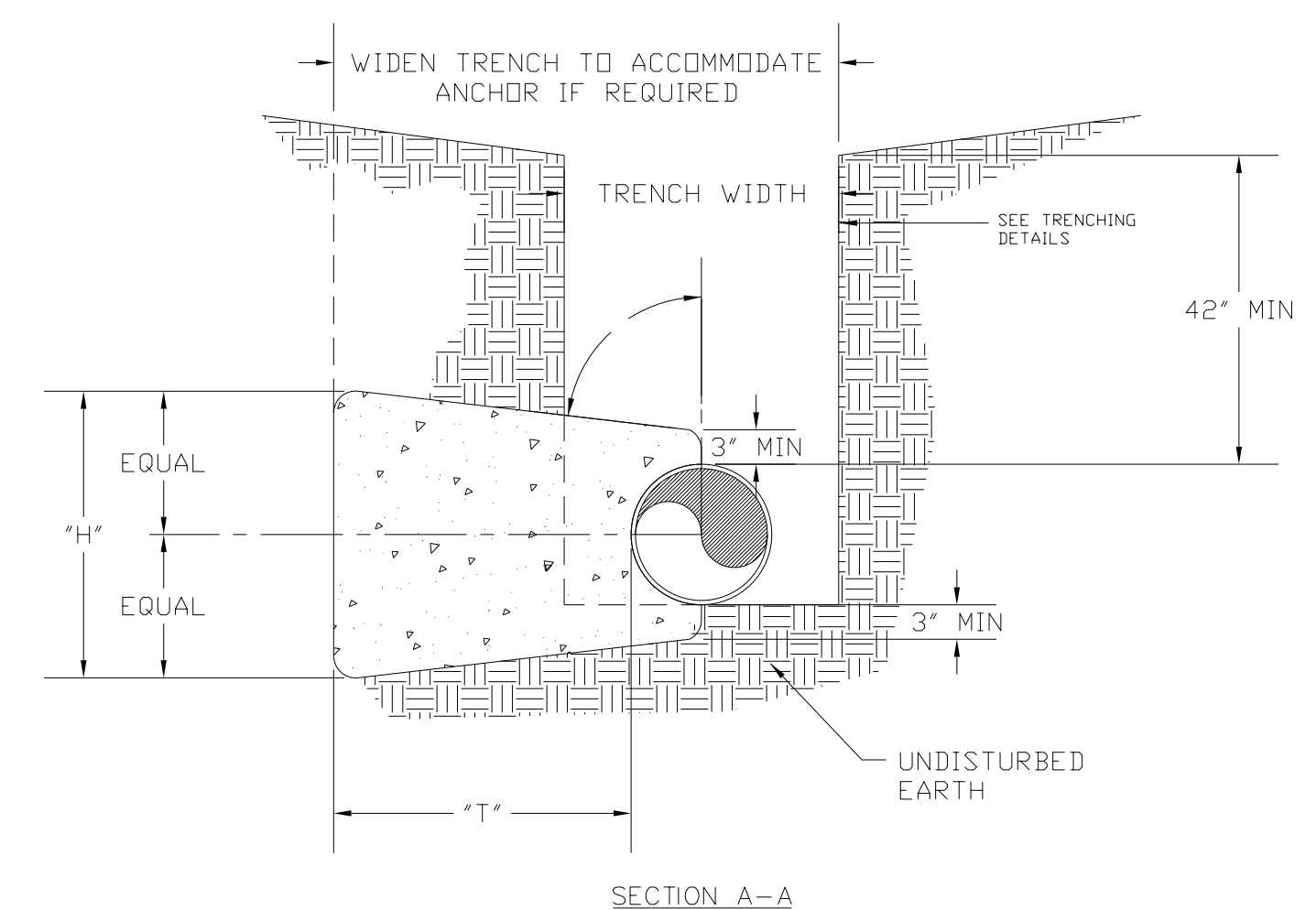
PROJECT TYPICAL DETAILS

PROJECT REFERENCE NO.	SHEET NO.
17BP.3.R.55	UC-3B
DESIGNED BY: ARV	
DRAWN BY: ARV	
CHECKED BY: RLB	
APPROVED BY:	
REVISED:	
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION	
UTILITIES ENGINEERING SEC. PHONE: (919) 707-6690 FAX: (919) 250-4151	
UTILITY CONSTRUCTION PLANS ONLY	

UTILITY CONSTRUCTION



FOR ALL BEND FITTINGS FOR TEE FITTING



- NOTES:
1. CONCRETE BLOCKING IS TO BE FORMED TO ENSURE ACCESSIBILITY TO FITTINGS AND POURED AGAINST UNDISTURBED EARTH.
 2. ALL FITTINGS SHALL BE WRAPPED IN POLYETHYLENE TO PREVENT CONCRETE FROM CONTACTING FITTINGS, BOLTS, OR ENDS OF MECHANICAL JOINT BENDS.
 3. CONCRETE TO BE MINIMUM 3,000 PSI @ 28 DAYS.
 4. WHEN SACKRETE IS TO BE USED, IT SHALL BE PROPERLY MIXED PER MANUFACTURER SPECIFICATIONS.
 5. FOR REQUIRED DIMENSIONS, SEE WS_TB2

THRUST BLOCKING
 NOT TO SCALE

TEST PRESSURE = 150 PSI

PIPE SIZE	TYPE FITTING	DIMENSIONS (FT)			VOLUME CONCRETE CU. YD.
		L	*H*	*T*	
<4 INCHES	11 1/4"	----	----	----	----
	22 1/2"	1.00	1.00	1.50	0.06
	45"	1.00	1.00	1.50	0.06
	90"	1.00	1.00	2.50	0.09
	TEE	1.00	1.00	2.00	0.07
4 INCHES	11 1/4"	1.00	1.00	2.50	0.09
	22 1/2"	1.00	1.00	2.50	0.09
	45"	1.00	1.00	2.50	0.09
	90"	1.50	1.50	2.50	0.15
	TEE	1.50	1.50	2.00	0.12
6 INCHES	11 1/4"	1.50	1.50	2.50	0.15
	22 1/2"	1.50	1.50	2.50	0.15
	45"	1.50	1.50	2.50	0.15
	90"	2.00	2.00	3.00	0.28
	TEE	2.00	2.00	2.50	0.23
8 INCHES	11 1/4"	2.00	2.00	2.50	0.23
	22 1/2"	2.00	2.00	2.50	0.23
	45"	2.00	2.00	2.75	0.25
	90"	3.00	2.00	3.00	0.39
	TEE	3.00	2.00	2.50	0.32
12 INCHES	11 1/4"	2.00	2.00	3.00	0.28
	22 1/2"	2.00	2.00	3.00	0.28
	45"	3.00	2.50	3.00	0.47
	90"	4.50	3.00	3.50	0.94
	TEE	4.50	3.00	3.00	0.81
16 INCHES	11 1/4"	2.00	2.00	3.00	0.28
	22 1/2"	3.00	2.00	3.00	0.39
	45"	4.00	3.00	3.50	0.84
	90"	6.50	3.50	3.50	1.54
	TEE	6.50	3.50	3.00	1.32

TEST PRESSURE = 200 PSI

PIPE SIZE	TYPE FITTING	DIMENSIONS (FT)			VOLUME CONCRETE CU. YD.
		L	*H*	*T*	
<4 INCHES	11 1/4"	1.00	1.00	1.00	0.04
	22 1/2"	1.00	1.00	1.50	0.06
	45"	1.00	1.00	1.50	0.06
	90"	1.50	1.50	2.50	0.15
	TEE	1.50	1.50	2.00	0.12
4 INCHES	11 1/4"	1.00	1.00	2.50	0.09
	22 1/2"	1.00	1.00	2.50	0.09
	45"	1.50	1.50	2.50	0.15
	90"	1.50	1.50	2.50	0.15
	TEE	1.50	1.50	2.00	0.12
6 INCHES	11 1/4"	1.50	1.50	2.50	0.15
	22 1/2"	1.50	1.50	2.50	0.15
	45"	1.50	1.50	2.50	0.15
	90"	2.50	2.00	3.00	0.33
	TEE	2.50	2.00	2.50	0.28
8 INCHES	11 1/4"	2.00	2.00	2.50	0.23
	22 1/2"	2.00	2.00	2.50	0.23
	45"	2.00	2.00	2.75	0.23
	90"	4.00	2.00	3.00	0.50
	TEE	4.00	2.00	2.50	0.42
12 INCHES	11 1/4"	2.00	2.00	3.00	0.28
	22 1/2"	3.00	2.00	3.00	0.39
	45"	4.00	2.50	3.00	0.61
	90"	5.50	3.00	3.50	1.13
	TEE	5.50	3.00	3.00	0.97
16 INCHES	11 1/4"	2.00	2.00	3.00	0.28
	22 1/2"	4.00	2.00	3.00	0.50
	45"	5.50	3.00	3.50	1.13
	90"	7.50	4.00	3.50	2.01
	TEE	7.50	4.00	3.00	1.72

- CHART NOTES:
1. IF BLOCKING EXCAVATION IS IN LIGHTLY COMPACTED FILL AREAS, OR IN AREAS WHERE BOULDERS OR STUMPS HAVE BEEN REMOVED, BLOCKING SIZE MUST BE RE-SIZED FOR THE SPECIFIC LOCATION/CIRCUMSTANCE BY A NC LICENSED PROFESSIONAL ENGINEER.
 2. BLOCKING SIZES SHOWN IN THESE TABLES ASSUME THE FOLLOWING:
 - a. BLOCKING IS CONSTRUCTED IN RESIDUAL SOILS AS SHOWN IN DETAIL
 - b. SOIL BEARING PRESSURE = 2000 PSF
 - c. VELOCITY OF FLOW = 15 FPS
 3. THIS DETAIL NOT APPLICABLE TO REDUCING BENDS.
 4. NEITHER THE WEIGHT OF THE CONCRETE BLOCKING NOR FRICTION BETWEEN CONCRETE BLOCKING AND SOIL WAS ADDED INTO BLOCKING SIZES COMPUTATION. THEREFORE, BLOCKING SIZE IS CONSERVATIVE.

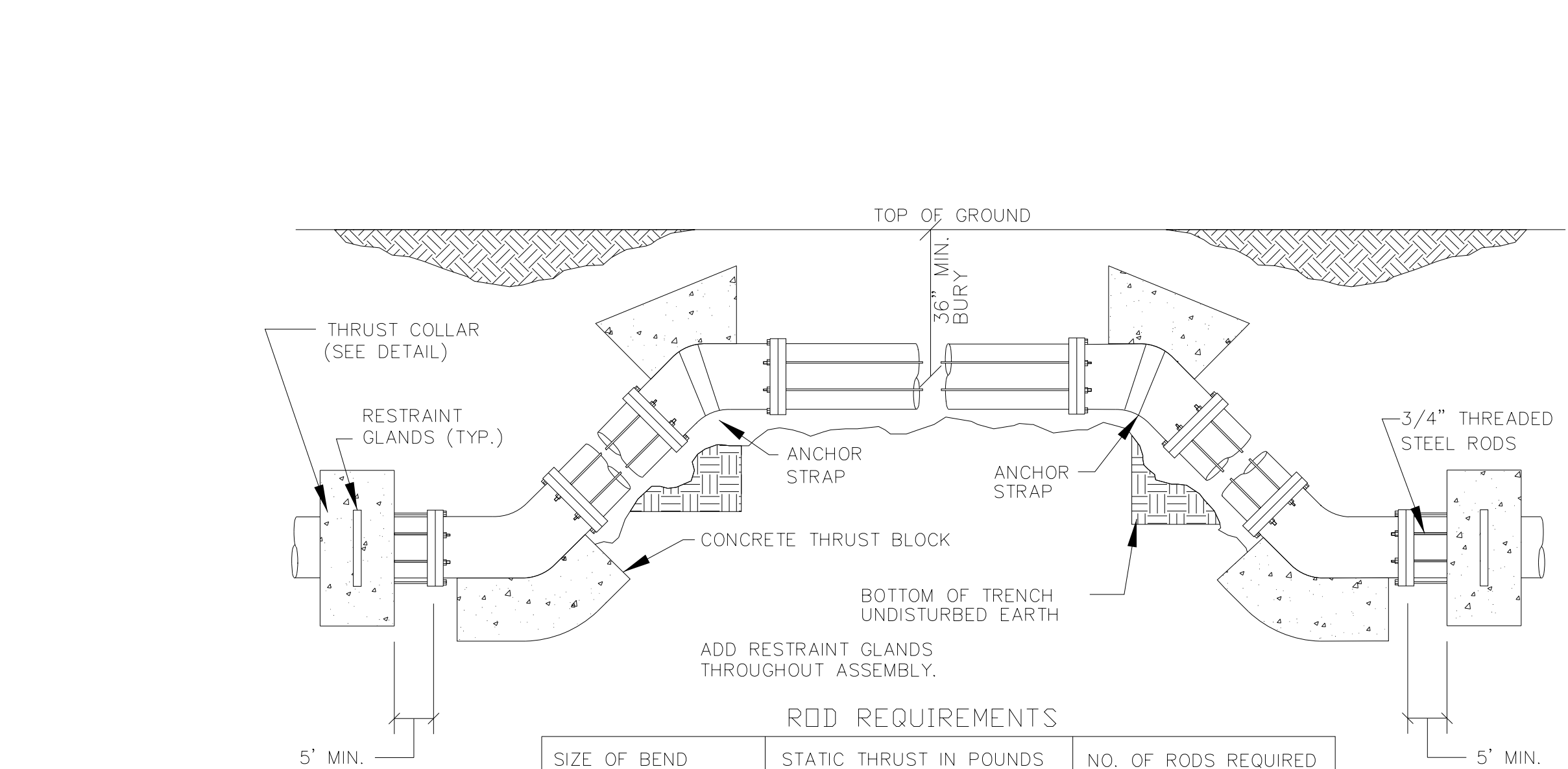
THRUST BLOCKING
 NOT TO SCALE

5/14/99

PROJECT TYPICAL DETAILS

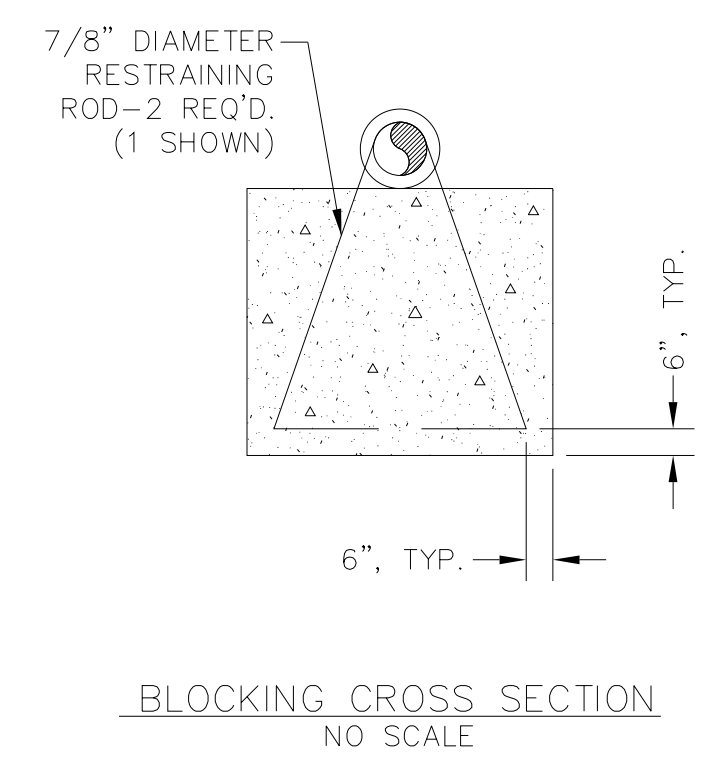
PROJECT REFERENCE NO.	SHEET NO.
17BP.3.R.55	UC-3C
DESIGNED BY: ARV	
DRAWN BY: ARV	
CHECKED BY: RLB	
APPROVED BY:	
REVISED:	
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION	
UTILITIES ENGINEERING SEC. PHONE: (919) 707-6690 FAX: (919) 250-4151	
UTILITY CONSTRUCTION PLANS ONLY	

UTILITY CONSTRUCTION



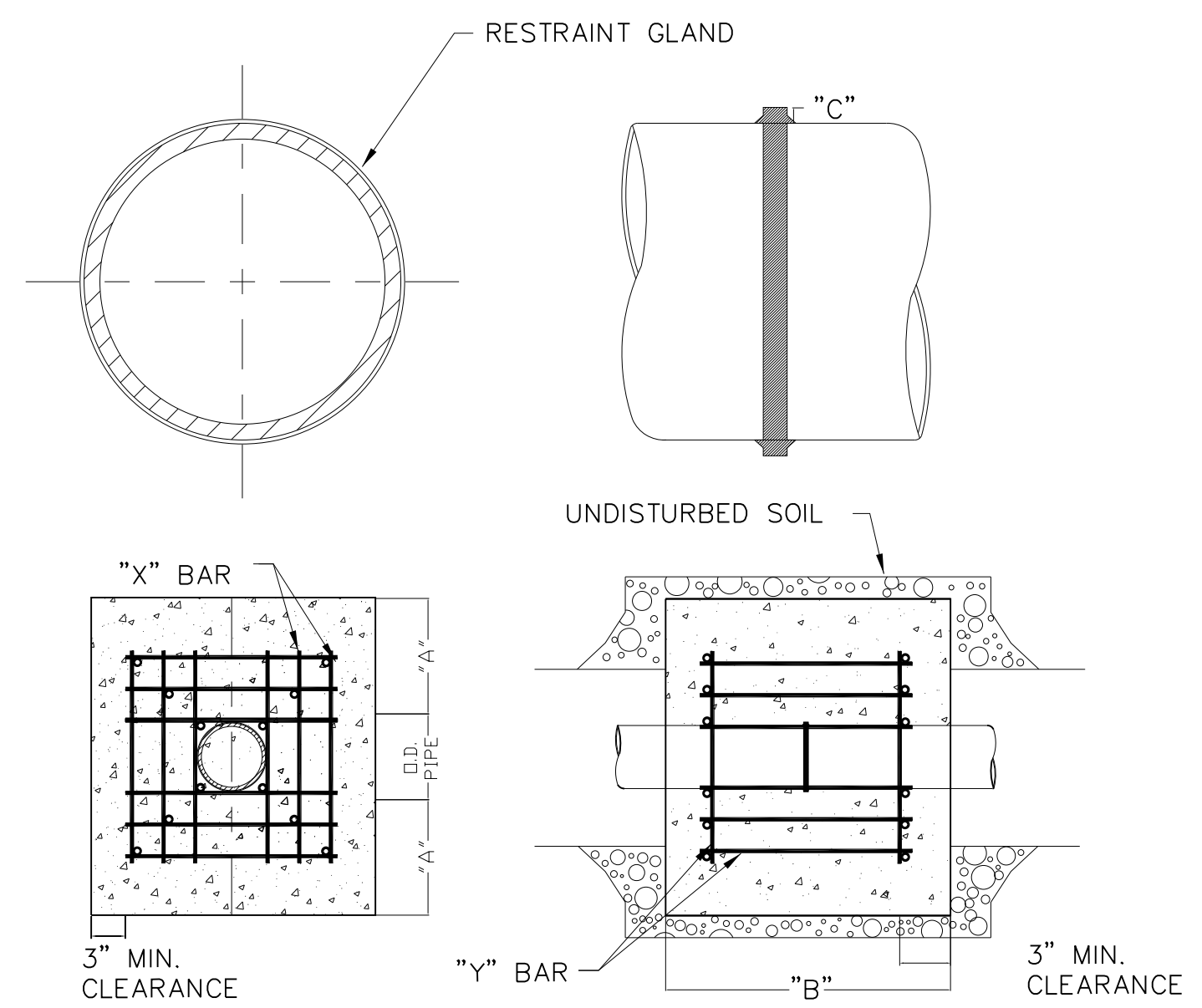
ROD REQUIREMENTS

SIZE OF BEND	STATIC THRUST IN POUNDS	NO. OF RODS REQUIRED
6"	4,328	4
8"	7,694	4
12"	17,312	4
16"	30,779	8
24"	69,252	8



- GENERAL NOTES:**
- ALL FITTINGS SHALL BE WRAPPED IN POLYETHYLENE TO PREVENT CONCRETE FROM CONTACTING FITTINGS, BOLTS, OR ENDS OF MECHANICAL JOINT BENDS.
 - EACH FITTING SHALL BE SECURED BY TWO FORMS OF RESTRAINT. RESTRAINING GLANDS AND CONCRETE THRUST BLOCKING ARE PREFERRED. WEDGE-ACTION RESTRAINING GLANDS (I.E. MEGALUGS) ARE APPROVED ONLY FOR USE ON DUCTILE IRON PIPE. FULL-CIRCUMFERENTIAL PIPE RESTRAINT GLANDS (I.E. GRIP RINGS) MAY BE USED ON PVC OR DUCTILE IRON PIPE. ALL RESTRAINING GLANDS SHALL BE SPECIFICALLY DESIGNED FOR USE ON THE TYPE OF PIPE FOR WHICH THEY ARE BEING INSTALLED. OTHER FORMS OF RESTRAINT SUCH AS THREADED ROD, BELL RESTRAINT HARNESSSES, ETC. MAY BE APPROVED BY ONWASA ON A CASE-BY-CASE BASIS.
 - IF APPROVED FOR USE BY ONWASA, STEEL RODS AND BOLTS SHALL BE 3/4" HOT DIPPED GALVANIZED.
 - MUST USE DUCTILE IRON EYE BOLTS WHERE NECESSARY.

THRUST BLOCKING DESIGN QUANTITY TABLE
NOT TO SCALE



REINFORCING REQUIREMENTS

I.D. PIPE	REBAR SIZE	"X" BAR LENGTH	"X" BAR WEIGHT	"Y" BAR LENGTH	"Y" BAR WEIGHT	NO. REQUIRED
6" - 36"	#5	2'-2"+ O.D. PIPE	1.043 LBS/FT	1'-1"	1.1 LBS. EACH	X-24, Y-12
48" & greater	#6	3'-0"+ O.D. PIPE	1.502 LBS/FT	1'-3"	1.9 LBS. EACH	X-24, Y-12

THRUST COLLAR, AND THRUST SCHEDULE

I.D. PIPE	"A"	"B"	"C-6"-16", 20"-24", 30"-36", 48"
6" - 36"	1'-4"	1'-7"	2" 3" 4"
48" & greater	1'-8"	1'-9"	6"

- NOTES:**
- CONCRETE SHALL BE 3000 PSI AND TRANSIT MIXED.
 - REINFORCING BARS SHALL BE DEFORMED AND TIED TOGETHER.
 - TRENCH BOTTOM WIDTH IN VICINITY OF THRUST BLOCK INSTALLATION SHALL BE THE MINIMUM WIDTH AS SHOWN ON STANDARD EMBEDMENT DETAIL.
 - BACKFILL TAMPED IN 6" LIFTS PER STANDARD EMBEDMENT DETAIL.

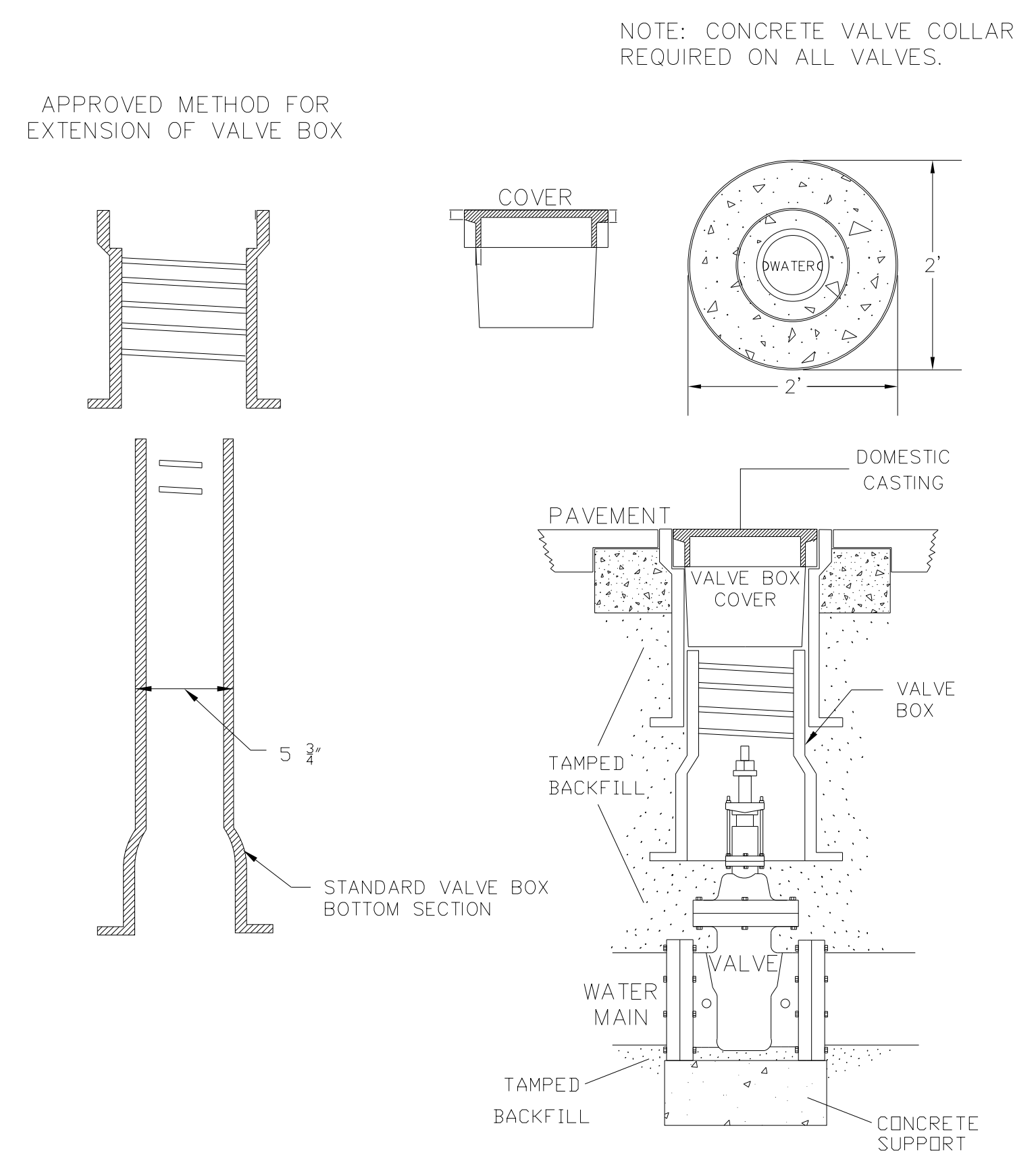
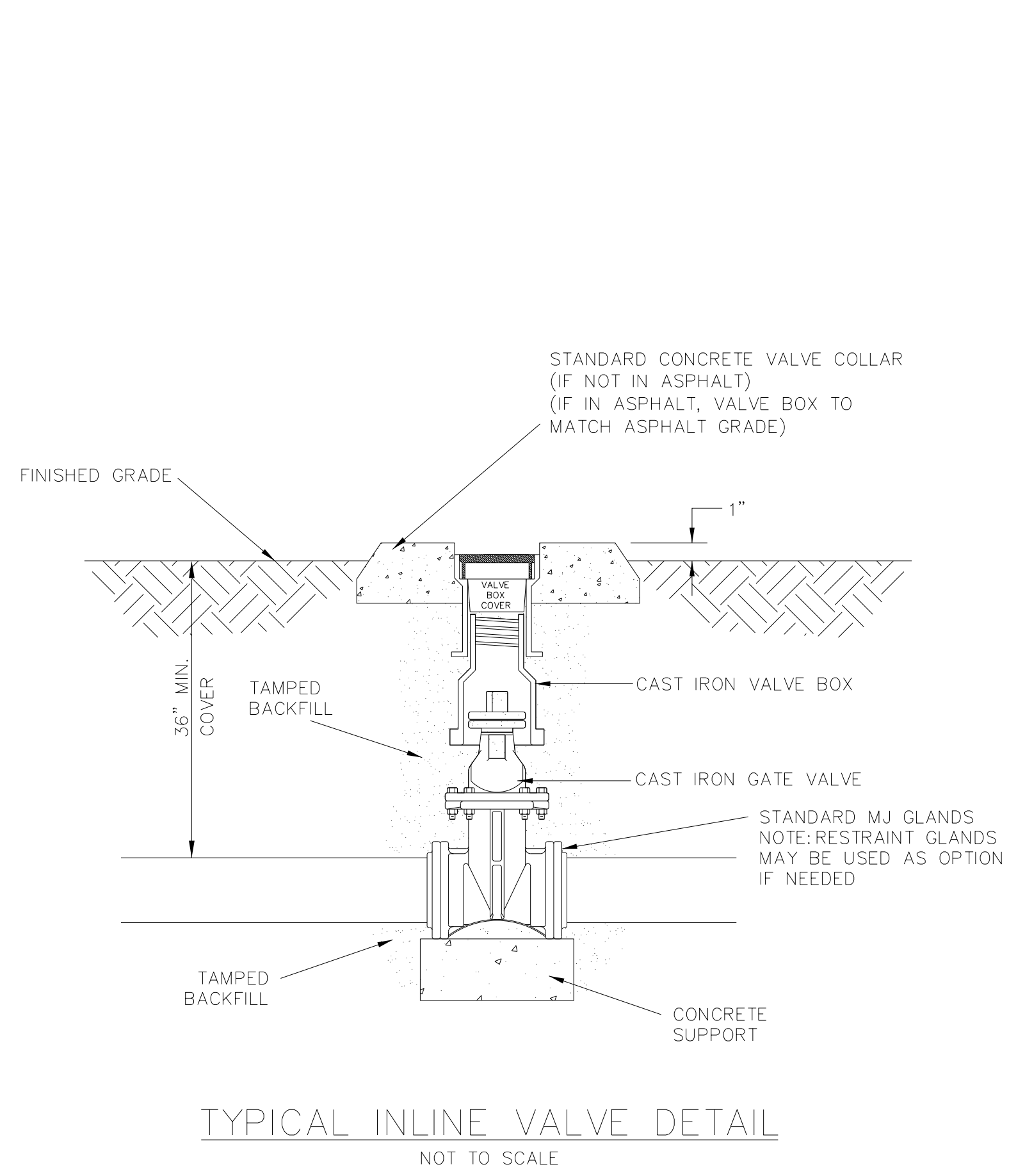
THRUST COLLAR DESIGN QUANTITY TABLE
NOT TO SCALE

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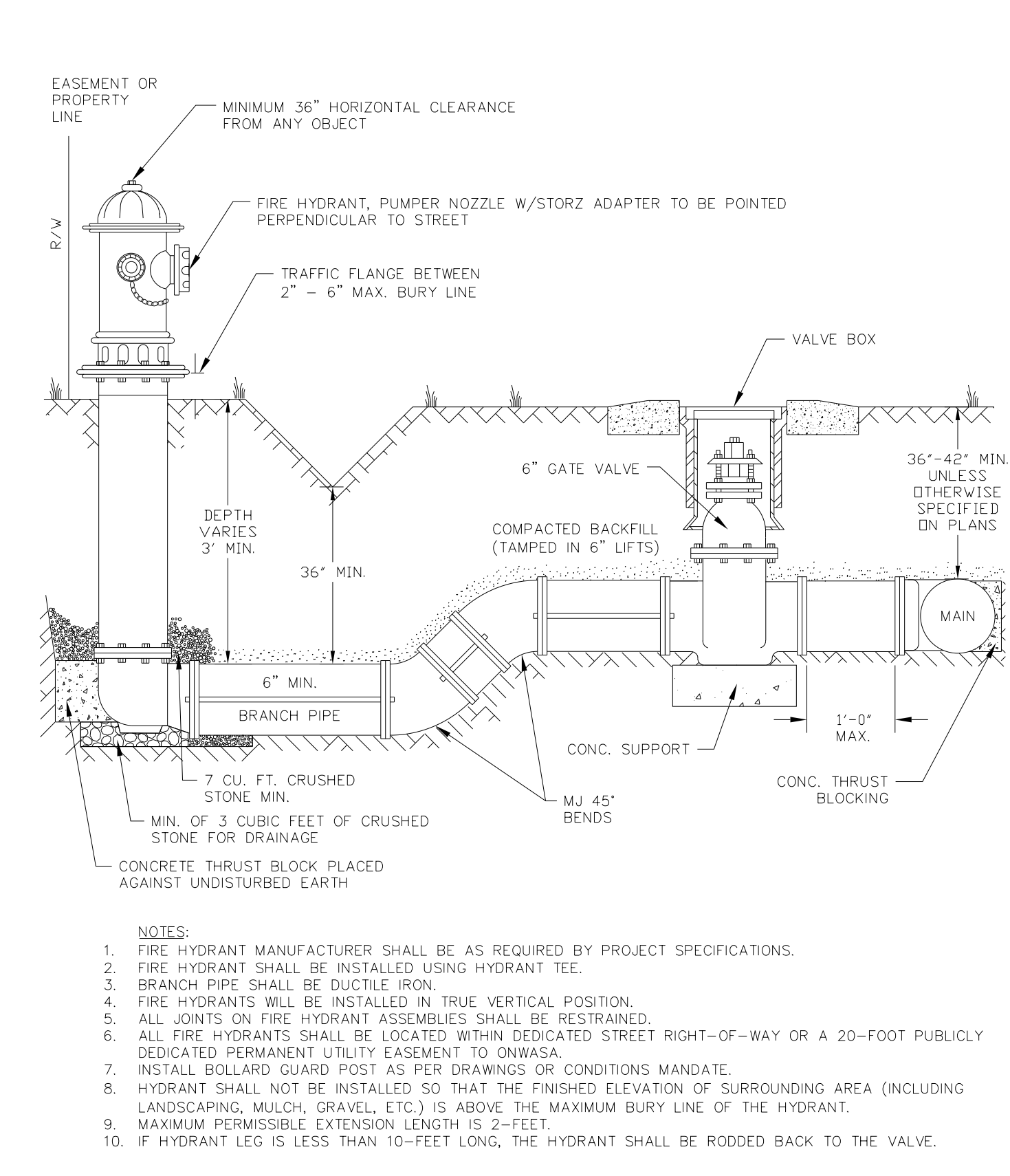
PROJECT TYPICAL DETAILS

PROJECT REFERENCE NO.	SHEET NO.
17BP.3.R.55	UC-3D
DESIGNED BY: ARV	
DRAWN BY: ARV	
CHECKED BY: RLB	
APPROVED BY:	
REVISED:	
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION	
UTILITIES ENGINEERING SEC. PHONE: (919) 707-6690 FAX: (919) 250-4151	
UTILITY CONSTRUCTION PLANS ONLY	

UTILITY CONSTRUCTION



NOTE: VALVE BOX SHALL BE PER ONWASA'S SPECIFICATIONS



- NOTES:
1. FIRE HYDRANT MANUFACTURER SHALL BE AS REQUIRED BY PROJECT SPECIFICATIONS.
 2. FIRE HYDRANT SHALL BE INSTALLED USING HYDRANT TEE.
 3. BRANCH PIPE SHALL BE DUCTILE IRON.
 4. FIRE HYDRANTS WILL BE INSTALLED IN TRUE VERTICAL POSITION.
 5. ALL JOINTS ON FIRE HYDRANT ASSEMBLIES SHALL BE RESTRAINED.
 6. ALL FIRE HYDRANTS SHALL BE LOCATED WITHIN DEDICATED STREET RIGHT-OF-WAY OR A 20-FOOT PUBLICLY DEDICATED PERMANENT UTILITY EASEMENT TO ONWASA.
 7. INSTALL BOLLARD GUARD POST AS PER DRAWINGS OR CONDITIONS MANDATE.
 8. HYDRANT SHALL NOT BE INSTALLED SO THAT THE FINISHED ELEVATION OF SURROUNDING AREA (INCLUDING LANDSCAPING, MULCH, GRAVEL, ETC.) IS ABOVE THE MAXIMUM BURY LINE OF THE HYDRANT.
 9. MAXIMUM PERMISSIBLE EXTENSION LENGTH IS 2- FEET.
 10. IF HYDRANT LEG IS LESS THAN 10- FEET LONG, THE HYDRANT SHALL BE RODDED BACK TO THE VALVE.

ANYTIME SITE WORK, CONSTRUCTION, ROAD WORK, OR ANY OTHER WORK CHANGES THE GRADE OF THE FIRE HYDRANT, THE CONTRACTOR IS RESPONSIBLE FOR ADJUSTING THE FIRE HYDRANT TO STAY WITHIN COMPLIANCE.

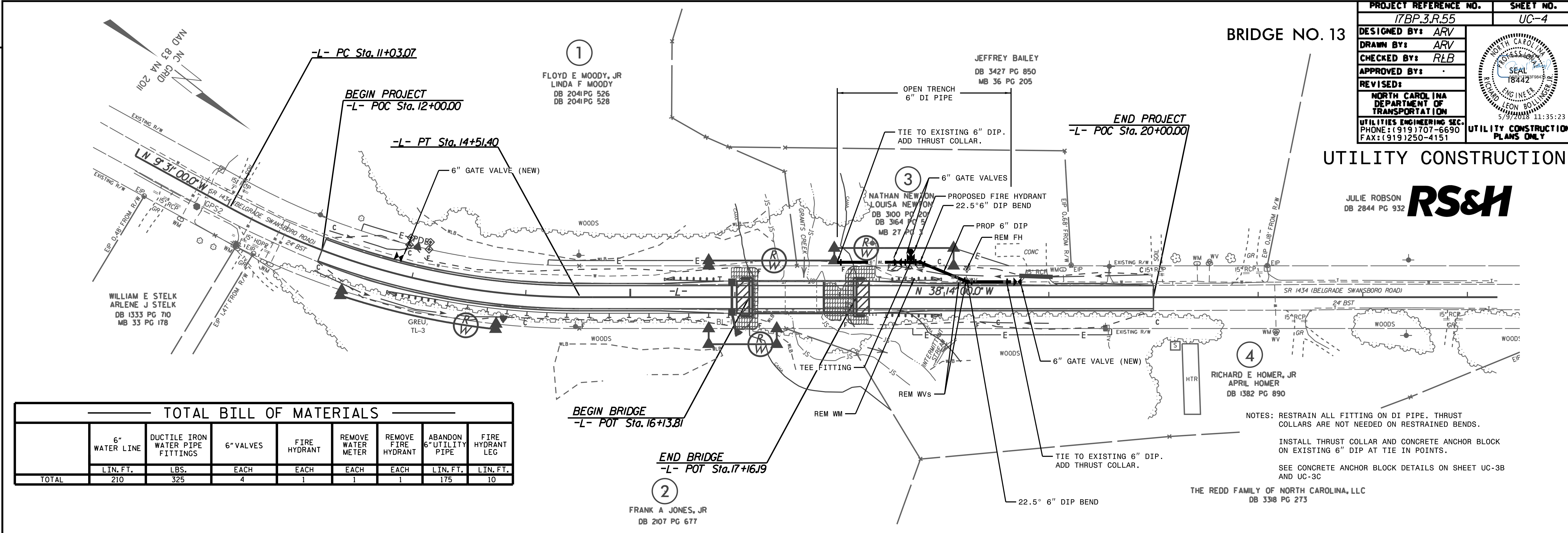
STANDARD FIRE HYDRANT ASSEMBLY SHOULDER/DITCH SECTION NOT TO SCALE

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8/17/98

PROJECT REFERENCE NO.	SHEET NO.
17BP.3.R.55	UC-4
DESIGNED BY: ARV	
DRAWN BY: ARV	
CHECKED BY: RLB	
APPROVED BY:	
REVISED:	
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION UTILITIES ENGINEERING SEC. PHONE: (919) 707-6690 FAX: (919) 250-4151	
UTILITY CONSTRUCTION PLANS ONLY	

BRIDGE NO. 13

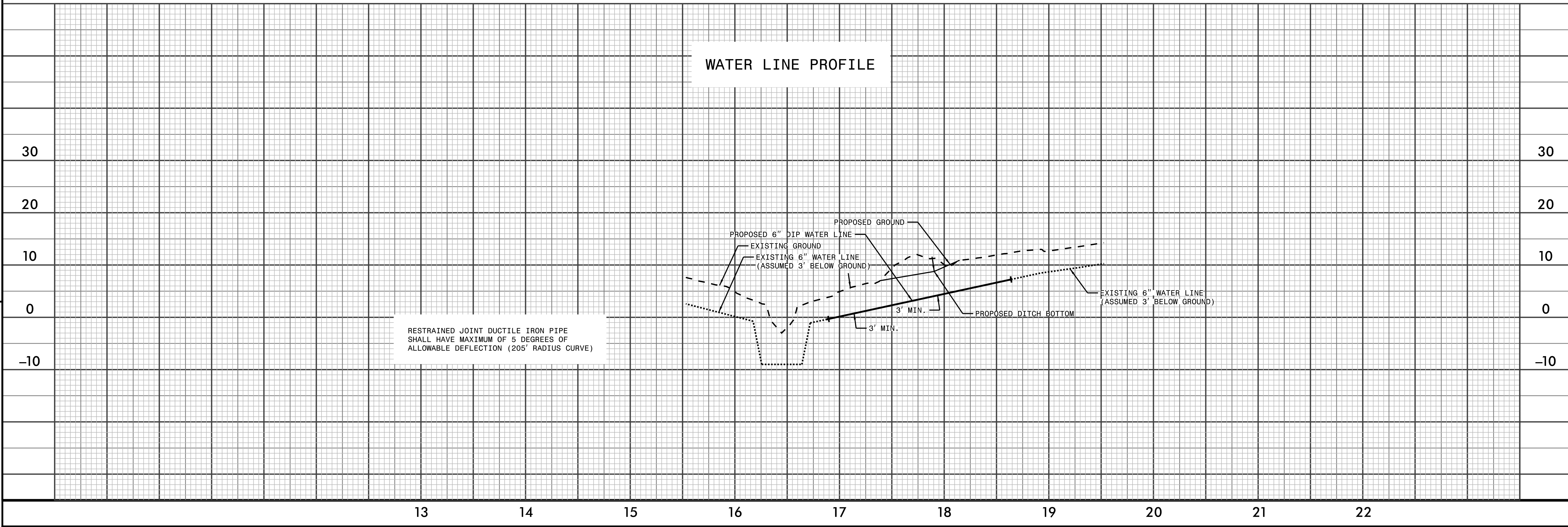


TOTAL BILL OF MATERIALS								
	6" WATER LINE	DUCTILE IRON WATER PIPE FITTINGS	6" VALVES	FIRE HYDRANT	REMOVE WATER METER	REMOVE FIRE HYDRANT	ABANDON 6" UTILITY PIPE	FIRE HYDRANT LEG
	LIN. FT.	LBS.	EACH	EACH	EACH	EACH	LIN. FT.	LIN. FT.
TOTAL	210	325	4	1	1	1	175	10

BRIDGE APPROACH SLAB

NOTES: RESTRAIN ALL FITTING ON DI PIPE. THRUST COLLARS ARE NOT NEEDED ON RESTRAINED BENDS.
 INSTALL THRUST COLLAR AND CONCRETE ANCHOR BLOCK ON EXISTING 6" DIP AT TIE IN POINTS.
 SEE CONCRETE ANCHOR BLOCK DETAILS ON SHEET UC-3B AND UC-3C
 THE REDD FAMILY OF NORTH CAROLINA, LLC
 DB 338 PG 273

WATER LINE PROFILE



RESTRAINED JOINT DUCTILE IRON PIPE SHALL HAVE MAXIMUM OF 5 DEGREES OF ALLOWABLE DEFLECTION (205' RADIUS CURVE)

REVISIONS

09/08/99

WBS: 17BP.3.R.55

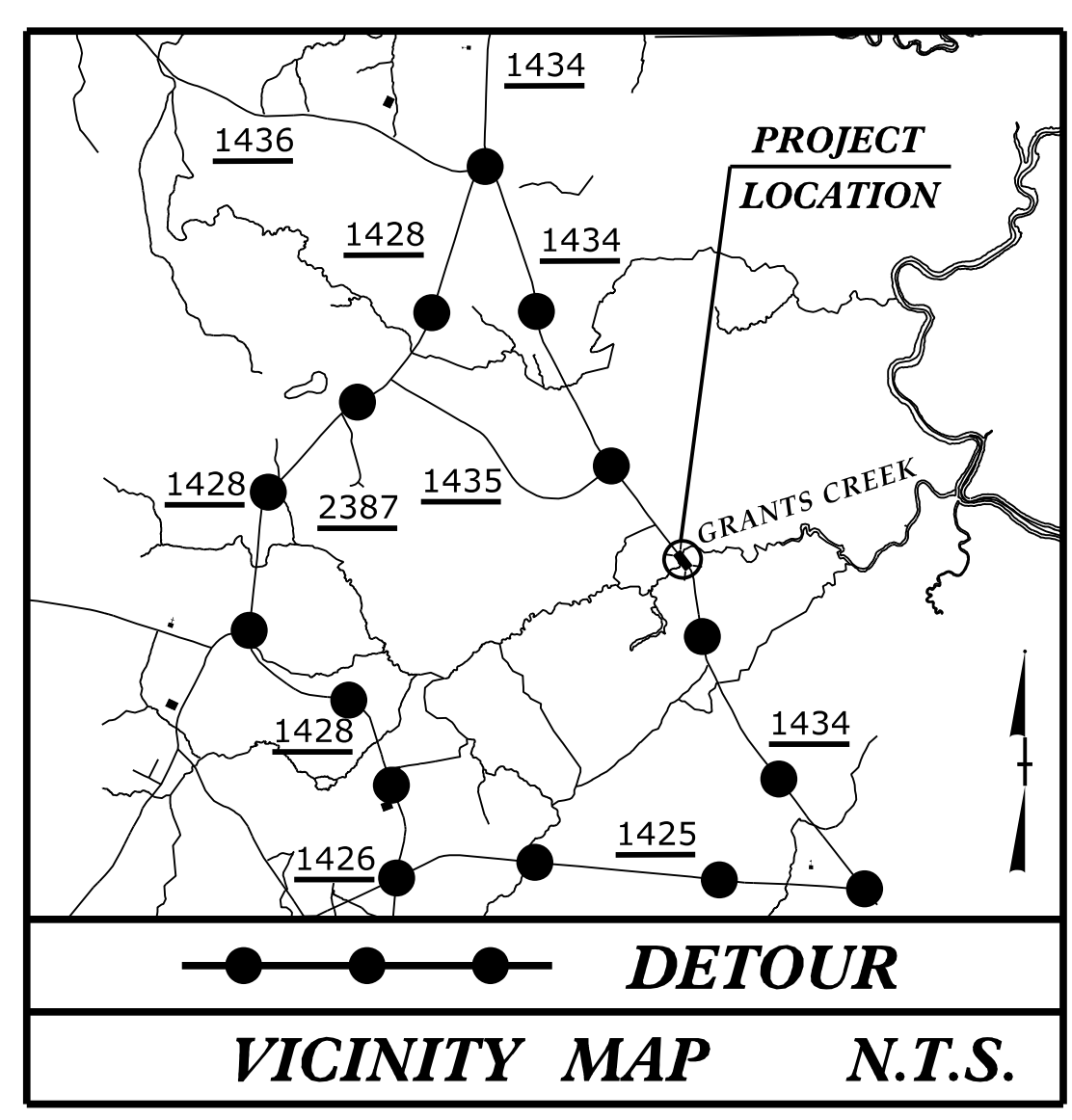
CONTRACT: DC00208

STATE OF NORTH CAROLINA DIVISION OF HIGHWAYS

UTILITIES BY OTHERS PLANS ONSLOW COUNTY

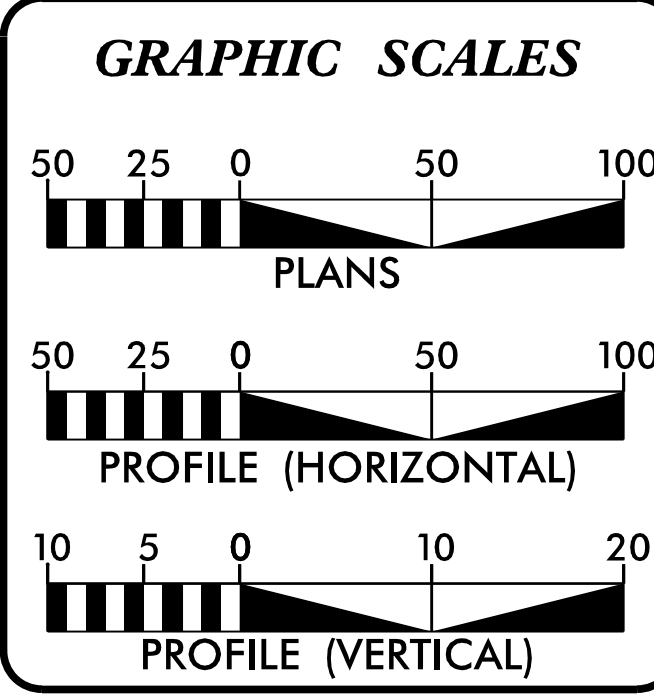
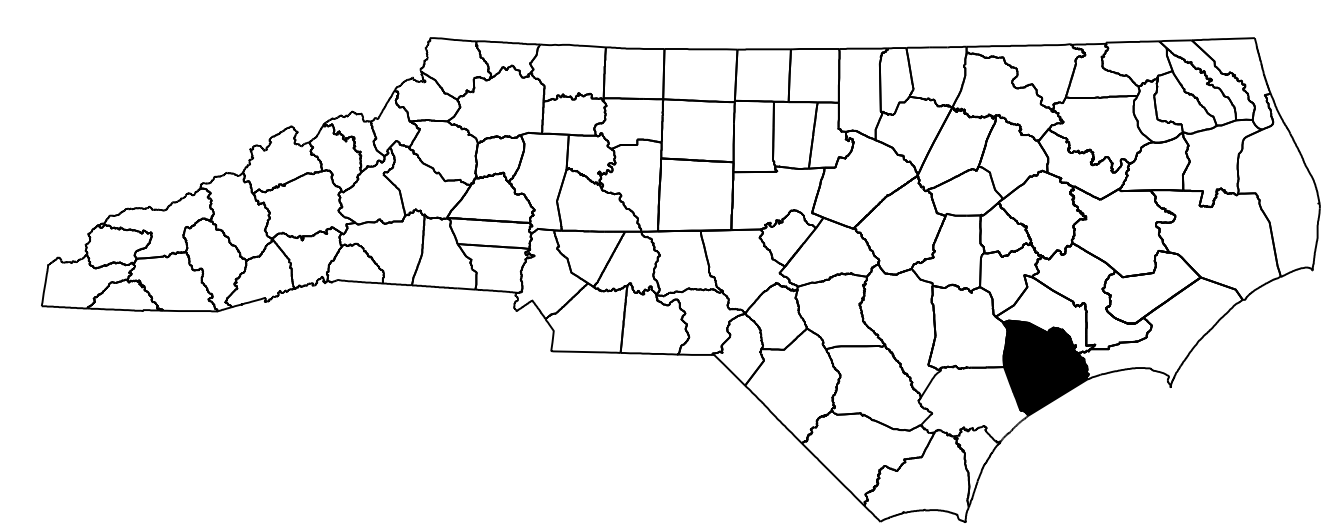
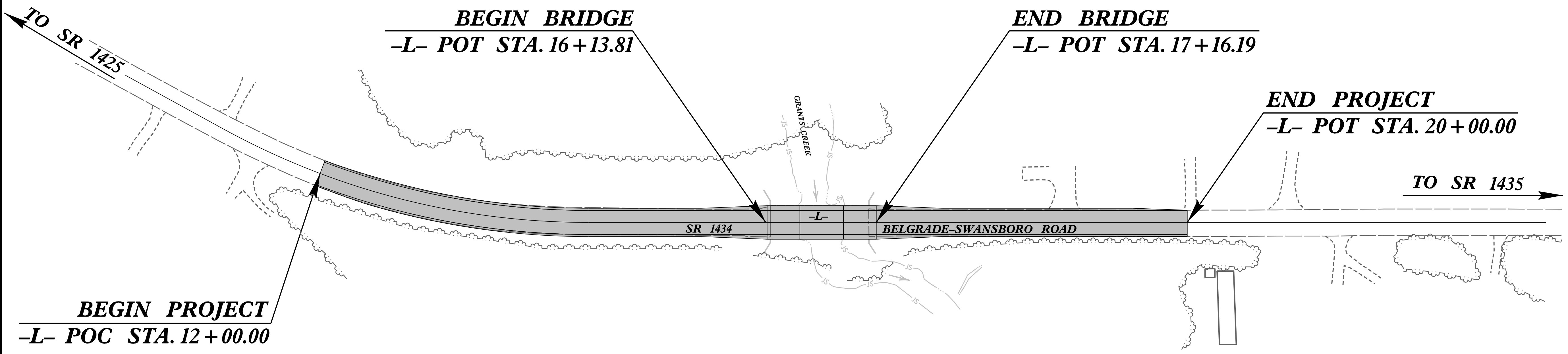
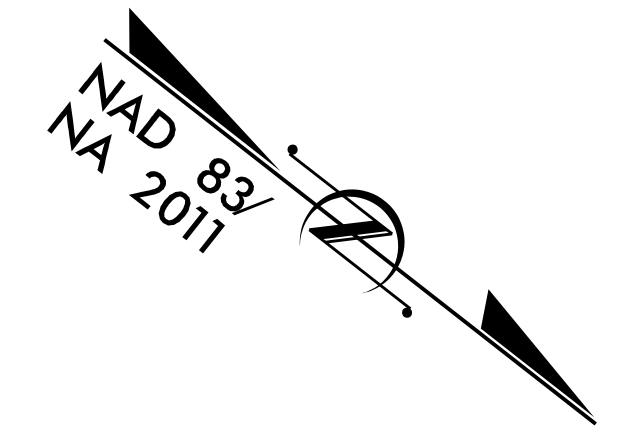
T.I.P. NO.	SHEET NO.
17BP.3.R.55	UO-1

NOTE:
ALL UTILITY WORK SHOWN ON THIS SHEET IS DONE BY OTHERS.
NO PAYMENT WILL BE MADE TO THE CONTRACTOR FOR UTILITY WORK SHOWN ON THIS SHEET.



LOCATION: BRIDGE NO.13 OVER GRANTS CREEKS
ON SR 1434 (BELGRADE-SWANSBORO RD.)

TYPE OF WORK: TELECOMMUNICATIONS



INDEX OF SHEETS

SHEET NO.:	DESCRIPTION:
UO-1	TITLE SHEET
UO-2	UBO PLAN SHEET

UTILITY OWNERS WITH CONFLICTS

(A) CHARTER - TELECOMMUNICATIONS

PREPARED IN THE OFFICE OF:

SO-DEEP | SAM NC
A SAM COMPANY
2800-154 Summer Boulevard, Raleigh, NC 27616 Tel 919-878-7466

Keith Garry UTILITY PROJECT MANAGER
William L. Johnson UTILITY COORDINATOR

RS&H ARCHITECTS-ENGINEERS-PLANNERS, INC.
8621 SIX FORKS ROAD, SUITE 400
RALEIGH, NC 27615

2018 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: OCTOBER 2, 2017

LETTING DATE: JUNE 21, 2018

RICHARD BOLLINGER, PE
PROJECT ENGINEER

CHARLES YOUNG, PE
PROJECT DESIGN ENGINEER

AL EDGERTON
NCDOT CONTACT

\$\$\$ SYSTEM \$\$\$
\$\$\$ DGN \$\$\$
\$\$\$ USER NAME \$\$\$

8/17/99

PROJECT REFERENCE NO.	SHEET NO.
17BP.3.R.55	U0-2
THIS SHEET CORRESPONDS TO RDY-4	

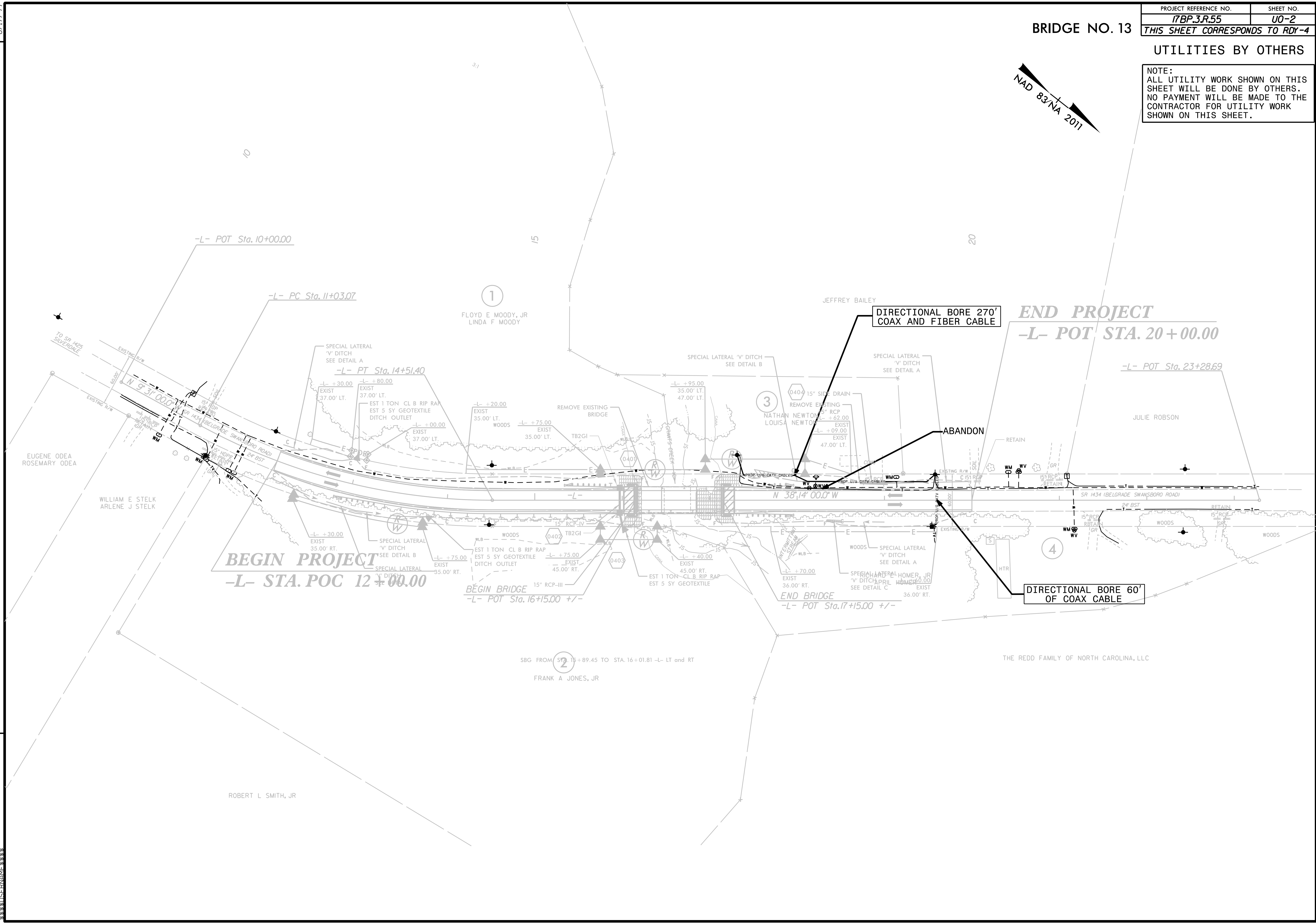
BRIDGE NO. 13

UTILITIES BY OTHERS

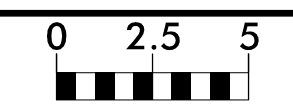
NOTE:
 ALL UTILITY WORK SHOWN ON THIS SHEET WILL BE DONE BY OTHERS. NO PAYMENT WILL BE MADE TO THE CONTRACTOR FOR UTILITY WORK SHOWN ON THIS SHEET.



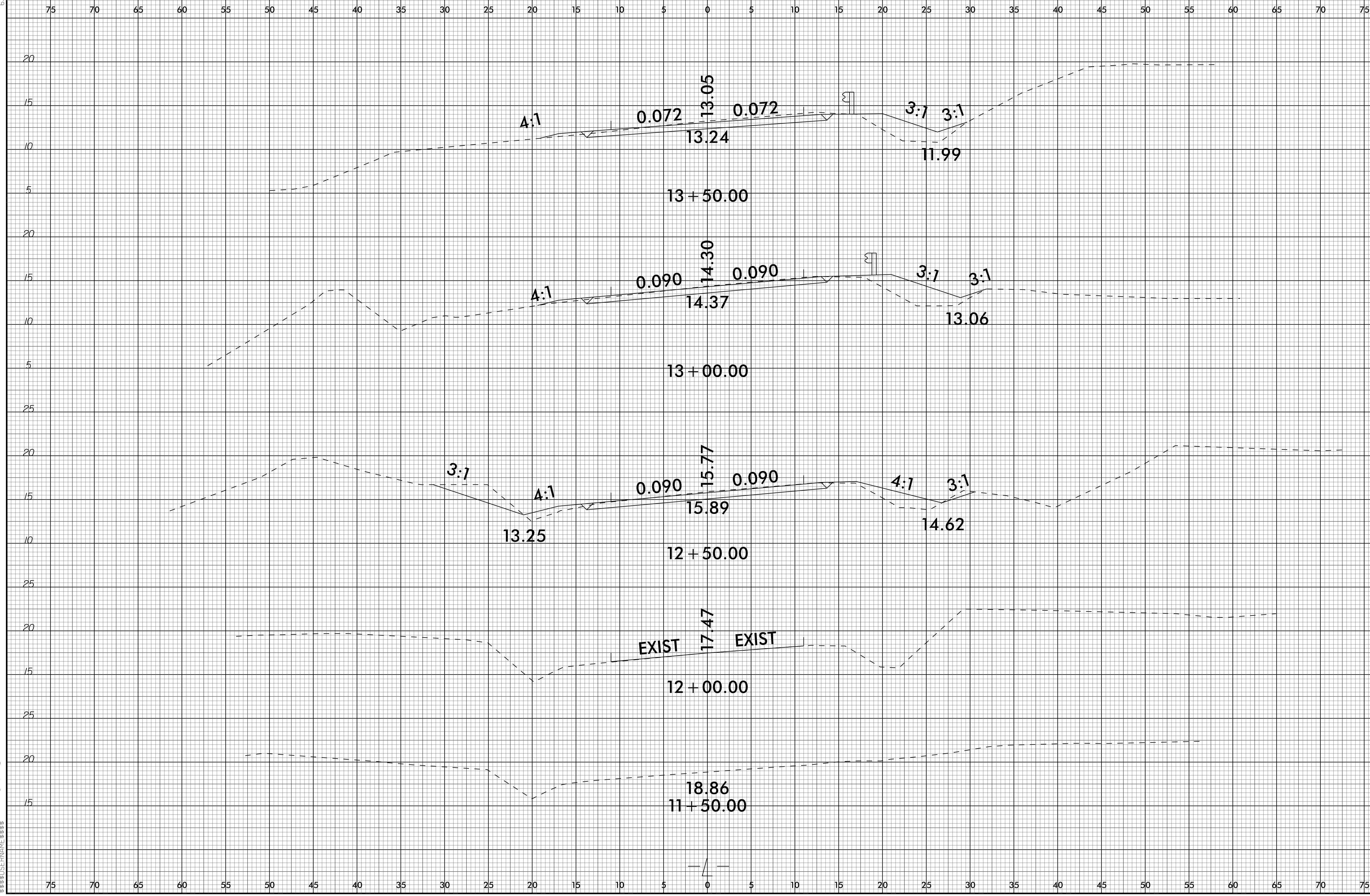
REVISIONS
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6/23/16

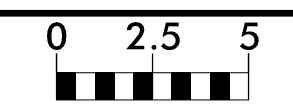


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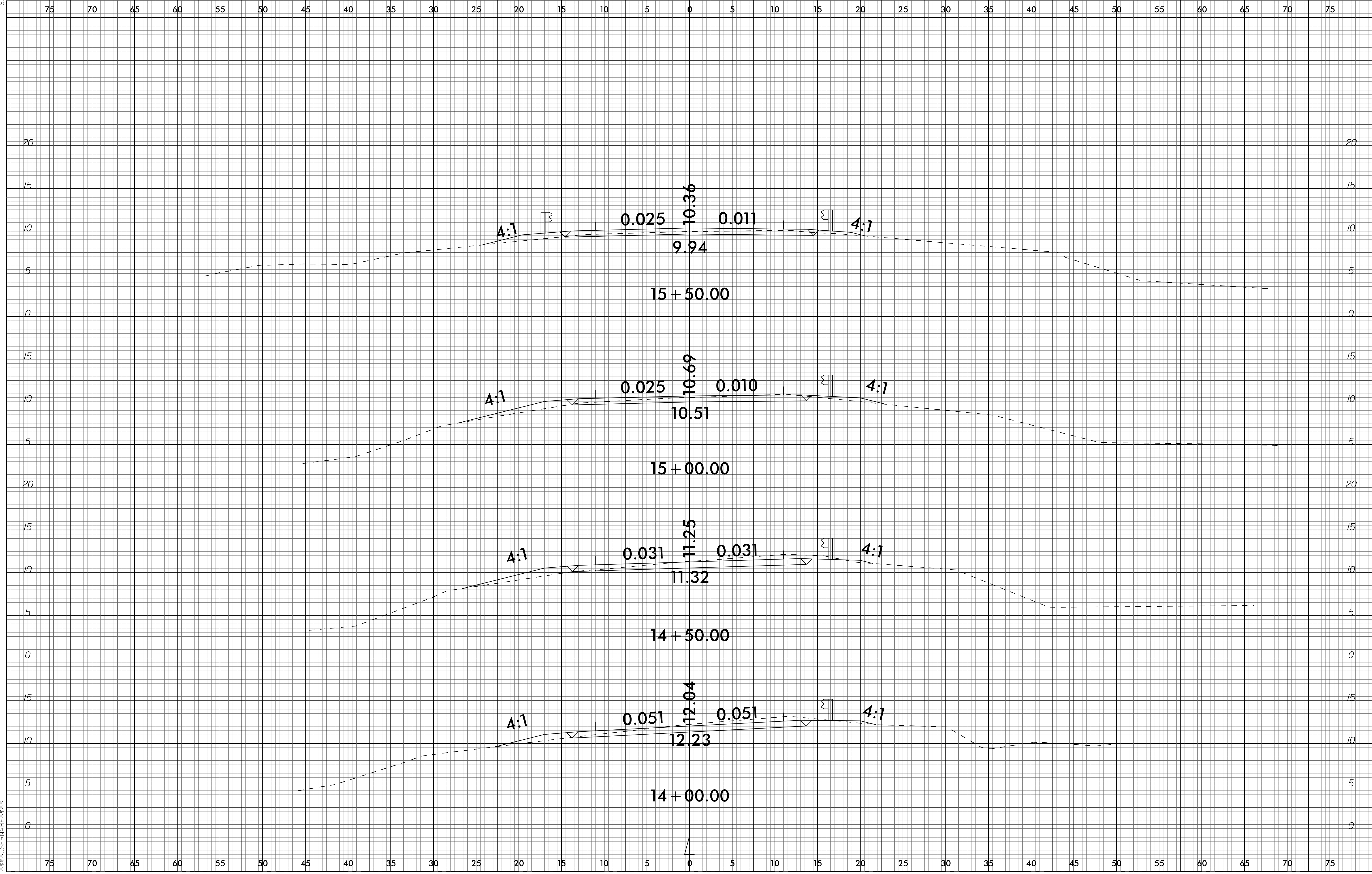


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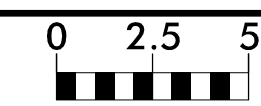


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17BP.3.R.55	X-2

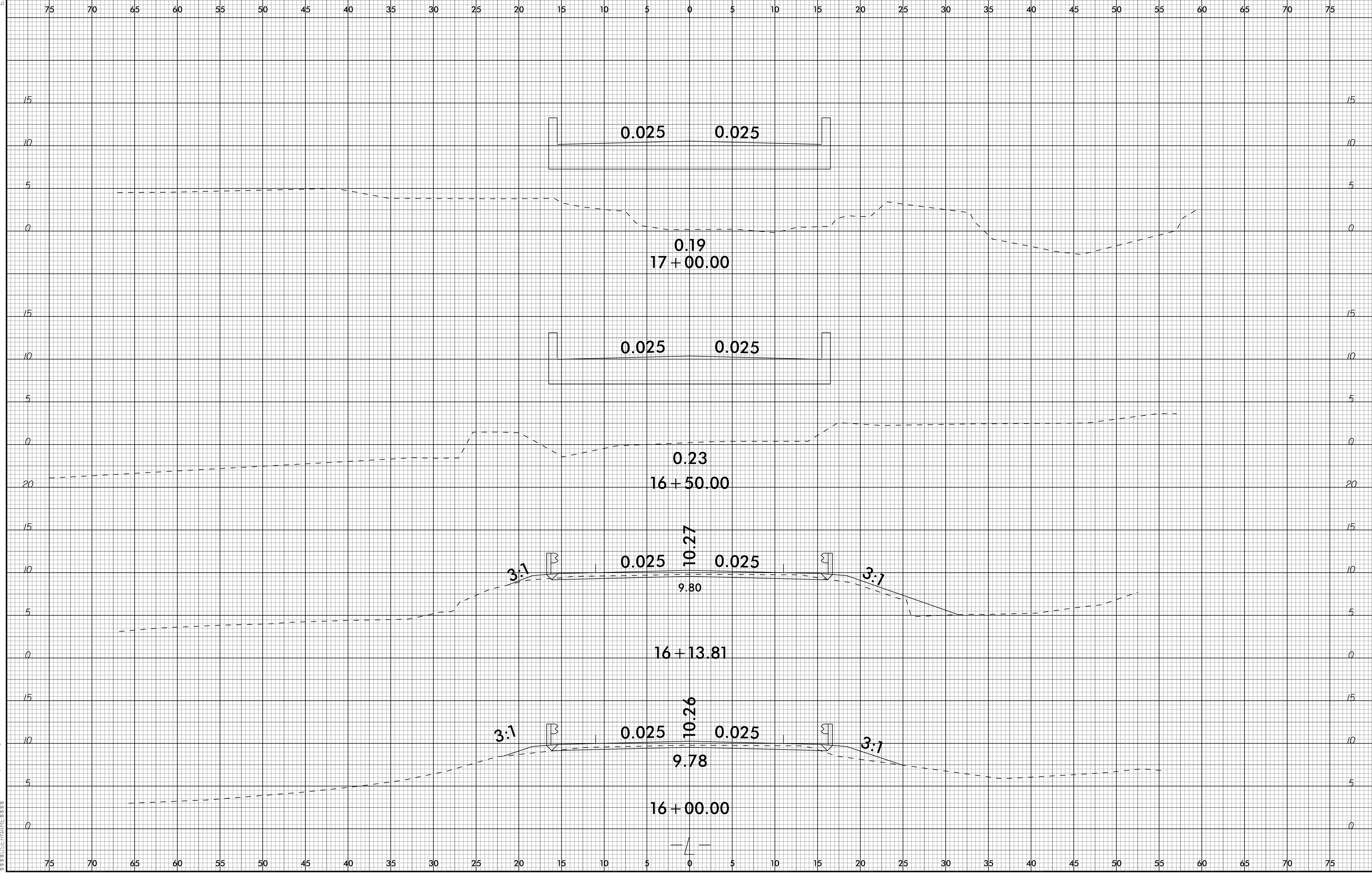


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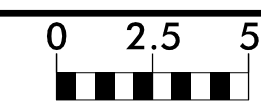


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17BP.3.R.55	X-3

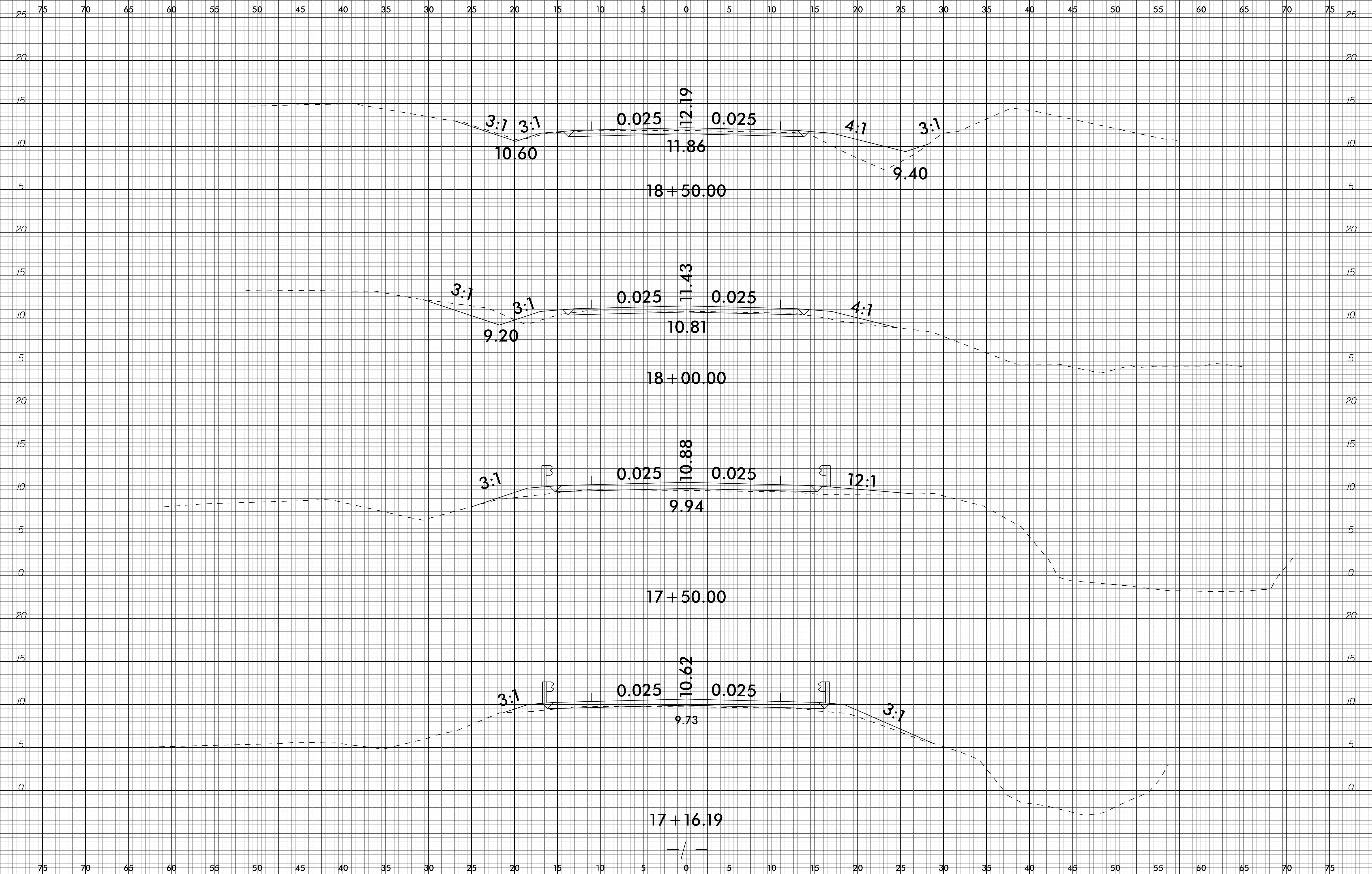


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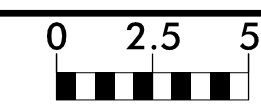


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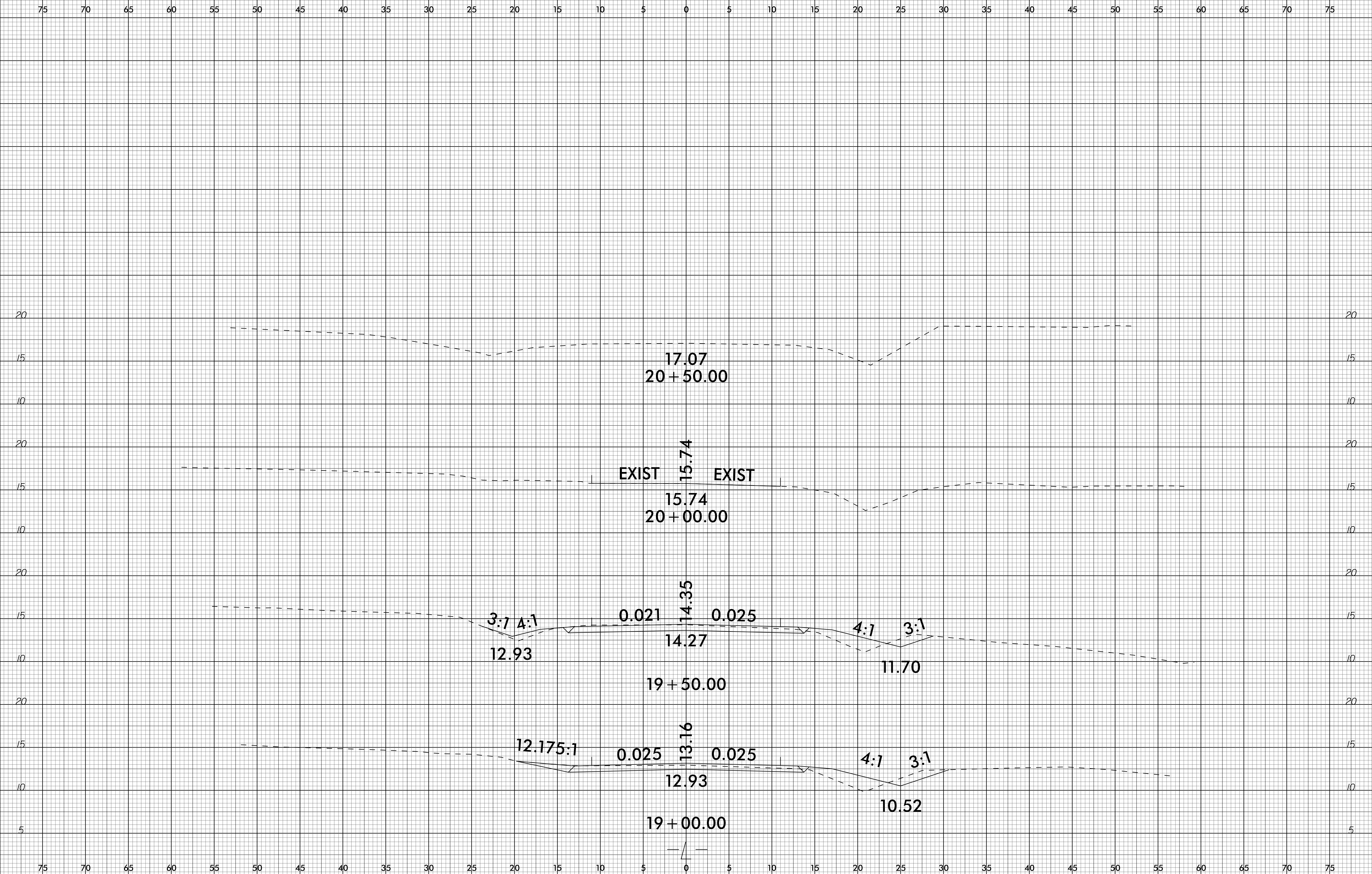


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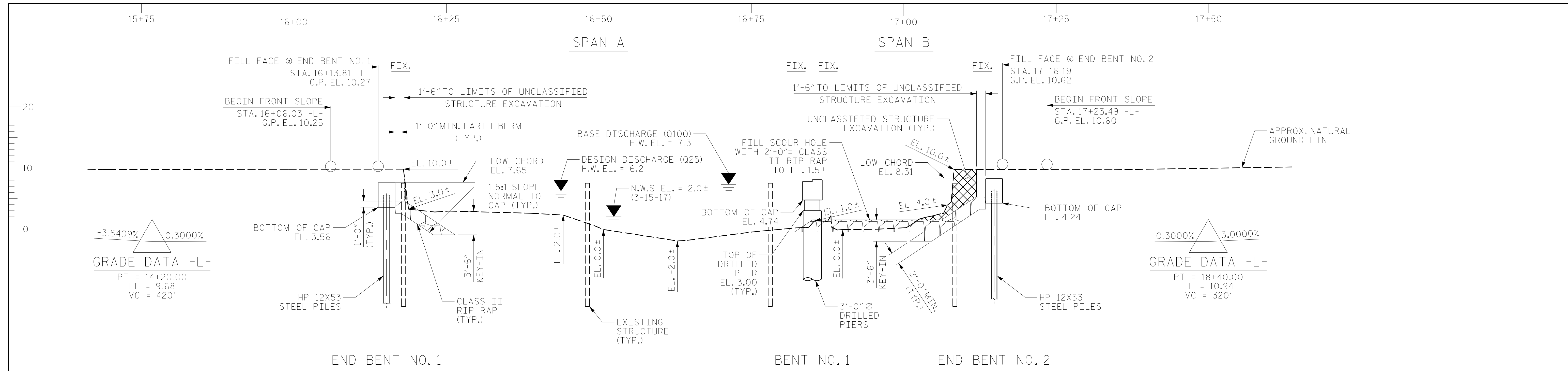
6/23/16



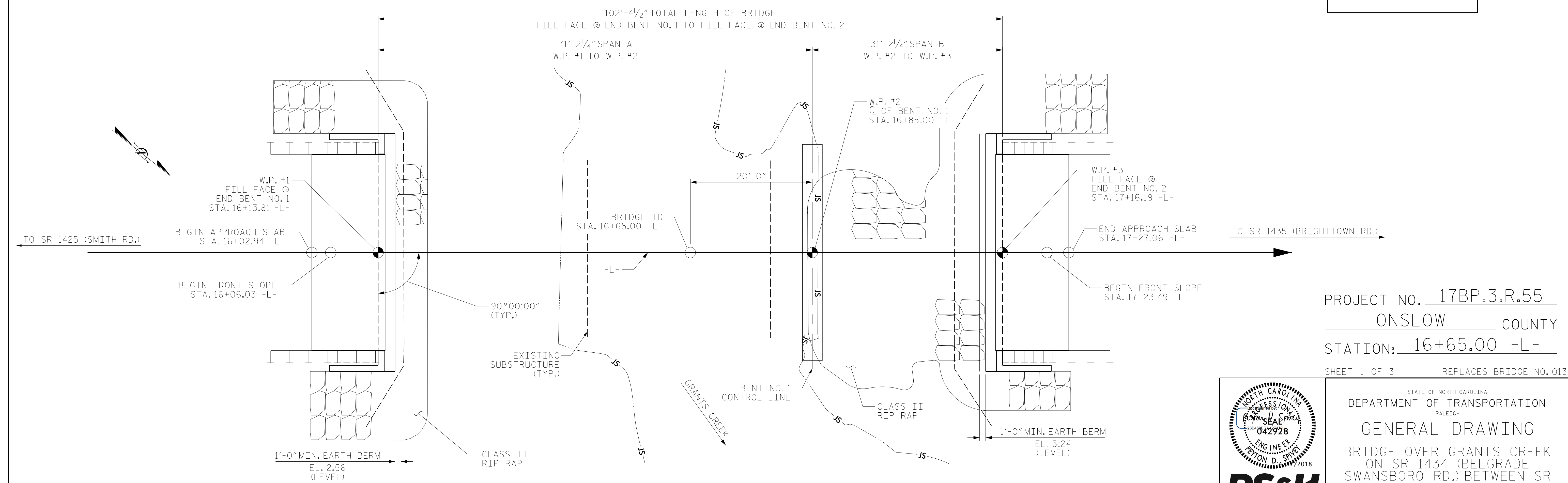
PROJ. REFERENCE NO.	SHEET NO.
17BP.3.R.55	X-5



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I HEREBY CERTIFY THESE PLANS ARE THE AS-BUILT PLANS



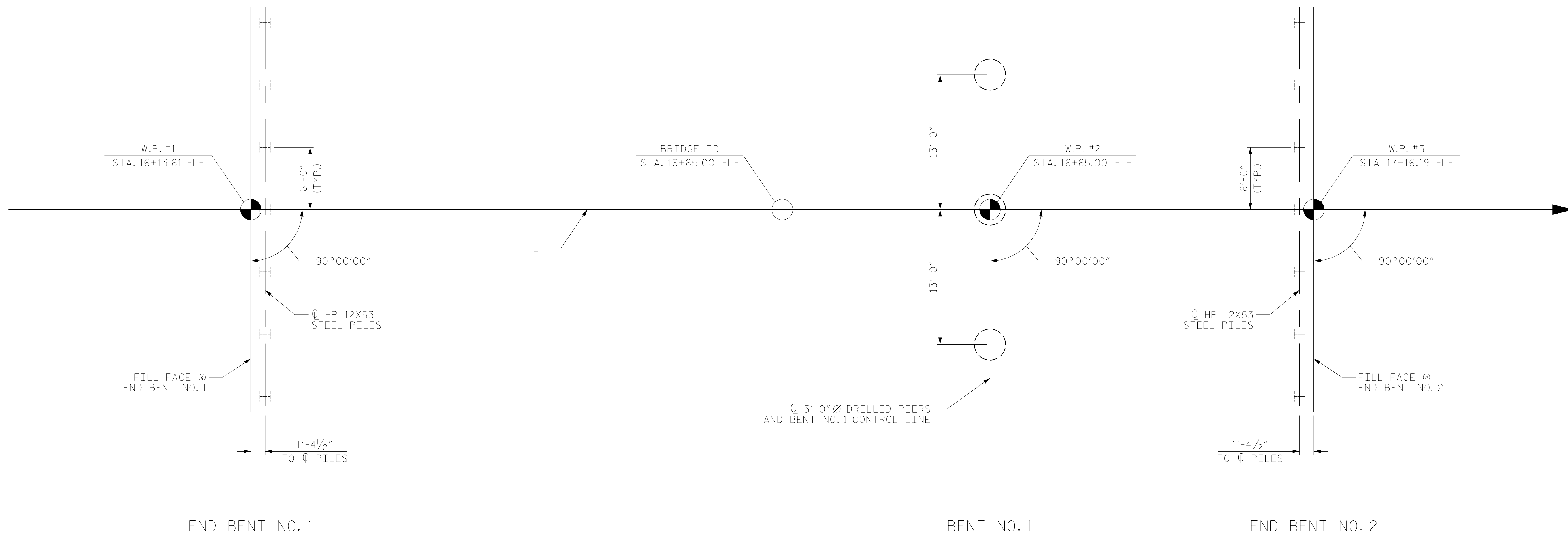
PROJECT NO. 17BP.3.R.55
 ONSLOW COUNTY
 STATION: 16+65.00 -L-
 SHEET 1 OF 3 REPLACES BRIDGE NO. 013

RS&H
 RS&H Architects-Engineers-Planners, Inc.
 8601 Six Forks Road, Suite 260
 Raleigh, NC 27615
 919-926-4100 FAX 919-846-9080
 www.rsandh.com
 North Carolina License No. 00737-5403-C-08

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-1
1			3			TOTAL SHEETS
2			4			20

DRAWN BY :	PDS	DATE :	09/2017
CHECKED BY :	TLC	DATE :	09/2017
DESIGN ENGINEER OF RECORD:	PDS	DATE :	09/2017

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



FOUNDATION LAYOUT

DIMENSIONS LOCATING PILES ARE SHOWN TO PILE CENTERLINE

FOUNDATION NOTES

FOR PILES, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS

PILES AT END BENT NO.1 AND END BENT NO.2 ARE DESIGNED FOR A FACTORED RESISTANCE OF 85 TONS PER PILE AND 55 TONS PER PILE, RESPECTIVELY.

DRIVE PILES AT END BENT NO.1 AND END BENT NO.2 TO A REQUIRED DRIVING RESISTANCE OF 145 TONS PER PILE AND 95 TONS PER PILE, RESPECTIVELY.

STEEL H-PILE POINTS ARE REQUIRED FOR STEEL H-PILES AT END BENT NO.1 AND END BENT NO.2. FOR STEEL PILE POINTS, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.

OBSERVE A ONE MONTH WAITING PERIOD AFTER CONSTRUCTING THE EMBANKMENT, END BENT AND REINFORCED BRIDGE APPROACH FILL, IF APPLICABLE, BEFORE BEGINNING APPROACH SLAB CONSTRUCTION AT END BENT NO.1 AND END BENT NO.2. FOR BRIDGE WAITING PERIODS, SEE ROADWAY PLANS AND SECTION 235 OF THE STANDARD SPECIFICATIONS.

FOR DRILLED PIERS, SEE SECTION 411 OF THE STANDARD SPECIFICATIONS.

DRILLED PIERS AT BENT NO.1 ARE DESIGNED FOR A FACTORED RESISTANCE OF 360 TONS PER PIER. CHECK FIELD CONDITIONS FOR THE REQUIRED TIP RESISTANCE OF 15 TSF.

PERMANENT STEEL CASINGS ARE REQUIRED FOR DRILLED PIERS AT BENT NO.1. DO NOT EXTEND PERMANENT CASINGS BELOW ELEVATION -12.0 FT WITHOUT PRIOR APPROVAL FROM THE ENGINEER.

INSTALL PERMANENT STEEL CASINGS AT BENT NO.1 BY VIBRATING, SCREWING, OR DRIVING PERMANENT CASINGS BEFORE EXCAVATING OR DISTURBING ANY MATERIAL BELOW ELEVATION -11 FT.

INSTALL DRILLED PIERS AT BENT NO.1 TO A TIP ELEVATION NO HIGHER THAN -50 FT WITH THE REQUIRED TIP RESISTANCE.

THE SCOUR CRITICAL ELEVATION FOR BENT NO.1 IS ELEVATION -13 FT. SCOUR CRITICAL ELEVATIONS ARE USED TO MONITOR POSSIBLE SCOUR PROBLEMS DURING THE LIFE OF THE STRUCTURE.

SPT IS REQUIRED FOR DRILLED PIERS. FOR SPT TESTING, SEE SECTION 411 OF THE STANDARD SPECIFICATIONS.

SLURRY CONSTRUCTION IS REQUIRED FOR DRILLED PIERS AT BENT NO.1.

SID INSPECTIONS MAY BE REQUIRED FOR DRILLED PIERS. THE ENGINEER WILL DETERMINE THE NEED FOR SID INSPECTIONS. FOR SID INSPECTIONS, SEE SECTION 411 OF THE STANDARD SPECIFICATIONS.

CSL TUBES ARE REQUIRED AND CSL TESTING MAY BE REQUIRED FOR DRILLED PIERS. THE ENGINEER WILL DETERMINE THE NEED FOR CSL TESTING. FOR CSL TESTING, SEE SECTION 411 OF THE STANDARD SPECIFICATIONS.

PROJECT NO. 17BP.3.R.55
ONSLOW COUNTY
 STATION: 16+65.00 -L-

SHEET 2 OF 3



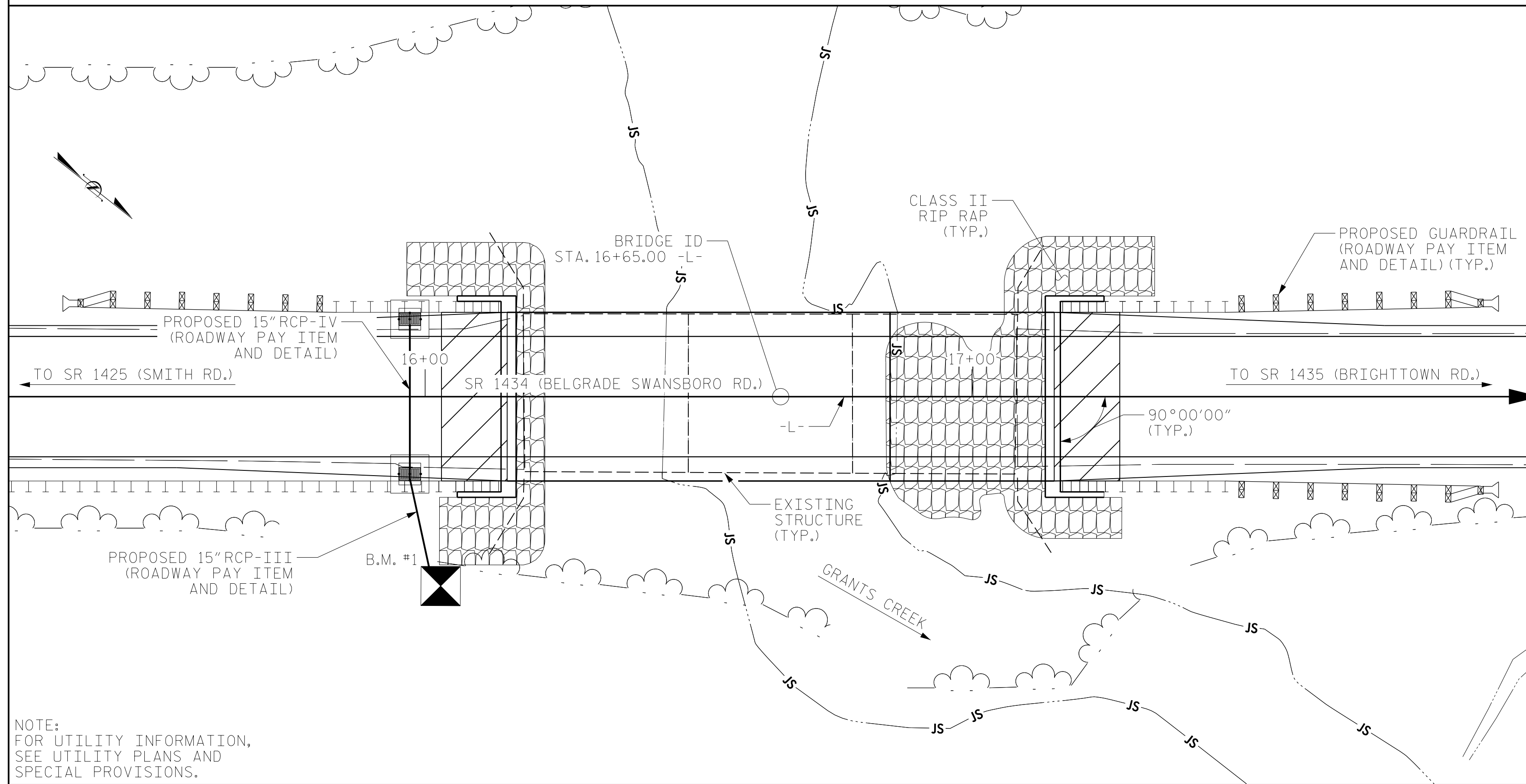
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
GENERAL DRAWING
 BRIDGE OVER GRANTS CREEK
 ON SR 1434 (BELGRADE
 SWANSBORO RD.) BETWEEN SR
 1425 (SMITH ROAD) AND SR
 1435 (BRIGHTTOWN RD.)

DRAWN BY :	PDS	DATE :	09/2017
CHECKED BY :	TLC	DATE :	09/2017
DESIGN ENGINEER OF RECORD:	PDS	DATE :	09/2017

DOCUMENT NOT CONSIDERED
 FINAL UNLESS ALL
 SIGNATURES COMPLETED

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-2
1			3			TOTAL SHEETS
2			4			20

BENCHMARK #1 - RR SPIKE SET IN 12" GUM TREE 34' RT. OF -L- STA. 16+02.85, EL. 8.40'



NOTE:
FOR UTILITY INFORMATION,
SEE UTILITY PLANS AND
SPECIAL PROVISIONS.

LOCATION SKETCH

NOTES

- ASSUMED LIVE LOAD = HL-93 OR ALTERNATE LOADING
- THIS BRIDGE HAS BEEN DESIGNED IN ACCORDANCE WITH THE REQUIREMENTS OF THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS.
- THIS BRIDGE IS LOCATED IN SEISMIC ZONE 1.
- THIS STRUCTURE HAS BEEN DESIGNED IN ACCORDANCE WITH "HEC-18 - EVALUATING SCOUR AT BRIDGES".
- THE MATERIAL SHOWN IN THE CROSS-HATCHED AREA ON SHEET 1 OF 3 SHALL BE EXCAVATED FOR A DISTANCE OF 30 FT. ± LEFT AND 31 FT. ± RIGHT OF THE ROADWAY CENTERLINE AS DIRECTED BY THE ENGINEER. THIS WORK WILL BE PAID FOR AT THE CONTRACT LUMP SUM PRICE FOR UNCLASSIFIED STRUCTURE EXCAVATION. SEE SECTION 412 OF THE STANDARD SPECIFICATIONS.
- THE SUBSTRUCTURE OF THE EXISTING BRIDGE INDICATED ON THE PLANS IS FROM THE BEST INFORMATION AVAILABLE. THIS INFORMATION IS SHOWN FOR THE CONVENIENCE OF THE CONTRACTOR. THE CONTRACTOR SHALL HAVE NO CLAIM WHATSOEVER AGAINST THE DEPARTMENT OF TRANSPORTATION FOR ANY DELAYS OR ADDITIONAL COST INCURRED BASED ON DIFFERENCES BETWEEN THE EXISTING BRIDGE SUBSTRUCTURE SHOWN ON THE PLANS AND THE ACTUAL CONDITIONS AT THE PROJECT SITE.
- REMOVAL OF THE EXISTING BRIDGE SHALL BE PERFORMED IN A MANNER THAT PREVENTS DEBRIS FROM FALLING INTO THE WATER. THE CONTRACTOR SHALL SUBMIT DEMOLITION PLANS FOR REVIEW AND REMOVE THE BRIDGE IN ACCORDANCE WITH ARTICLE 402-2 OF THE STANDARD SPECIFICATIONS.
- INASMUCH AS THE PAINT SYSTEM ON THE EXISTING STRUCTURAL STEEL CONTAINS LEAD, THE CONTRACTOR'S ATTENTION IS DIRECTED TO ARTICLE 107-1 OF THE STANDARD SPECIFICATIONS. ANY COSTS RESULTING FROM COMPLIANCE WITH APPLICABLE STATE OR FEDERAL REGULATIONS PERTAINING TO HANDLING OF MATERIALS CONTAINING LEAD BASED PAINT SHALL BE INCLUDED IN THE BID PRICE FOR "REMOVAL OF EXISTING STRUCTURE AT STATION 16+65.00 -L-".
- THE CONSTRUCTION, MAINTENANCE, AND REMOVAL OF THE TEMPORARY ACCESS FOR THE CONSTRUCTION OF THE DRILLED PIERS SHALL BE INCIDENTAL TO THE COST OF THE 3'-0" DIAMETER DRILLED PIERS AND SHALL CONFIRM TO THE CONDITIONS OUTLINED IN THE PERMIT DRAWINGS.
- FOR EROSION CONTROL MEASURES, SEE EROSION CONTROL PLANS.
- ASPHALT WEARING SURFACE IS INCLUDED IN ROADWAY QUANTITY ON ROADWAY PLANS.
- FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.
- FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.
- FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.
- FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.
- FOR ASBESTOS ASSESSMENT, SEE SPECIAL PROVISIONS.
- FOR OTHER DESIGN DATA AND GENERAL NOTES, SEE SHEET SN.

TOTAL BILL OF MATERIALS

	REMOVAL OF EXISTING STRUCTURE	3'-0" DIA DRILLED PIERS IN SOIL	3'-0" DIA DRILLED PIERS NOT IN SOIL	PERMANENT STEEL CASING FOR 3'-0" Ø DRILLED PIERS	SID INSPECTIONS	SPT TESTING	CSL TESTING	UNCLASSIFIED STRUCTURE EXCAVATION	CLASS A CONCRETE	BRIDGE APPROACH SLABS	REINFORCING STEEL
	LUMP SUM	LIN. FT.	LIN. FT.	LIN. FT.	EACH	EACH	EACH	LUMP SUM	CU. YDS.	LUMP SUM	LBS.
SUPERSTRUCTURE	LUMP SUM	---	---	---	---	---	---	LUMP SUM	---	LUMP SUM	---
END BENT NO. 1	---	---	---	---	---	---	---	---	21.8	---	2,636
BENT NO. 1	---	63.0	96.0	45.0	1	1	1	---	14.5	---	12,835
END BENT NO. 2	---	---	---	---	---	---	---	---	21.6	---	2,636
TOTAL	LUMP SUM	63	96	45	1	1	1	LUMP SUM	57.9	LUMP SUM	18,107

	SPIRAL COLUMN REINFORCING STEEL	PILE DRIVING EQUIPMENT SETUP FOR HP 12X53 STEEL PILES	HP 12X53 STEEL PILES	STEEL PILE POINTS	VERTICAL CONCRETE BARRIER RAIL	RIP RAP CLASS II	GEOTEXTILE FOR DRAINAGE	ELASTOMERIC BEARINGS	3'-0" X 1'-9" PRESTRESSED CONCRETE CORED SLABS	3'-0" X 2'-0" PRESTRESSED CONCRETE CORED SLABS	ASBESTOS ASSESSMENT		
	LBS.	EACH	NO.	LIN. FT.	EACH	TONS	SQ. YDS.	LUMP SUM	NO.	LIN. FT.	NO.	LIN. FT.	LUMP SUM
---	---	---	---	---	---	---	---	LUMP SUM	11	330.0	11	770.0	LUMP SUM
---	7	7	245	7	---	125	140	---	---	---	---	---	---
2,775	---	---	---	---	---	---	---	---	---	---	---	---	---
---	7	7	245	7	---	245	190	---	---	---	---	---	---
2,775	14	14	490	14	200.0	370	330	LUMP SUM	11	330.0	11	770.0	LUMP SUM

HYDRAULIC DATA

DESIGN DISCHARGE	= 980 CFS
FREQUENCY OF DESIGN DISCHARGE	= 25 YRS
DESIGN HIGH WATER ELEVATION	= 6.2
DRAINAGE AREA	= 9.8 SQ MI
BASE DISCHARGE (Q100)	= 1,500 CFS
BASE HIGH WATER ELEVATION	= 7.3

OVERTOPPING FLOOD DATA

OVERTOPPING DISCHARGE	= 3,750 CFS
FREQUENCY OF OVERTOPPING	= 500+ YRS
Δ OVERTOPPING ELEVATION	= 10.4
Δ SAG AT STA. 15+97.20 -L- ROADWAY OVERTOPPING EL.	= 10.31

PROJECT NO. 17BP.3.R.55
ONslow COUNTY
 STATION: 16+65.00 -L-

SHEET 3 OF 3



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
GENERAL DRAWING
 BRIDGE OVER GRANTS CREEK
 ON SR 1434 (BELGRADE SWANSBORO RD.) BETWEEN SR 1425 (SMITH ROAD) AND SR 1435 (BRIGHTTOWN RD.)

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-3
1			3			TOTAL SHEETS
2			4			20

DRAWN BY : PDS DATE : .09/2017
 CHECKED BY : TLC DATE : .09/2017
 DESIGN ENGINEER OF RECORD: PDS DATE : .09/2017

DOCUMENT NOT CONSIDERED
 FINAL UNLESS ALL
 SIGNATURES COMPLETED

LOAD AND RESISTANCE FACTOR RATING (LRFD) SUMMARY FOR PRESTRESSED CONCRETE GIRDERS

LEVEL	VEHICLE	WEIGHT (W) (TONS)	CONTROLLING LOAD RATING	MINIMUM RATING FACTORS (RF)	TONS = W X RF	STRENGTH I LIMIT STATE										SERVICE III LIMIT STATE					COMMENT NUMBER			
						MOMENT					SHEAR					MOMENT								
						LIVELOAD FACTORS	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	LIVELOAD FACTORS	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN		GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	
DESIGN LOAD RATING	HL-93(Inv)	N/A	1	1.006	--	1.75	0.273	1.03	70'	EL	34.5	0.507	1.32	70'	EL	6.9	0.80	0.273	1.01	70'	EL	34.5		
	HL-93(0pr)	N/A	--	1.341	--	1.35	0.273	1.34	70'	EL	34.5	0.507	1.72	70'	EL	6.9	N/A	--	--	--	--	--		
	HS-20(Inv)	36.000	2	1.306	47.02	1.75	0.273	1.34	70'	EL	34.5	0.507	1.65	70'	EL	6.9	0.80	0.273	1.31	70'	EL	34.5		
	HS-20(0pr)	36.000	--	1.74	62.64	1.35	0.273	1.74	70'	EL	34.5	0.507	2.14	70'	EL	6.9	N/A	--	--	--	--	--		
LEGAL LOAD RATING	SV	SNSH	13.500	--	2.917	39.379	1.4	0.273	3.75	70'	EL	34.5	0.507	4.87	70'	EL	6.9	0.80	0.273	2.92	70'	EL	34.5	
		SNGARBS2	20.000	--	2.187	43.741	1.4	0.273	2.81	70'	EL	34.5	0.507	3.47	70'	EL	6.9	0.80	0.273	2.19	70'	EL	34.5	
		SNAGRIS2	22.000	--	2.077	45.69	1.4	0.273	2.67	70'	EL	34.5	0.507	3.23	70'	EL	6.9	0.80	0.273	2.08	70'	EL	34.5	
		SNCOTTS3	27.250	--	1.452	39.565	1.4	0.273	1.87	70'	EL	34.5	0.507	2.43	70'	EL	6.9	0.80	0.273	1.45	70'	EL	34.5	
		SNAGGRS4	34.925	--	1.218	42.554	1.4	0.273	1.57	70'	EL	34.5	0.507	2.03	70'	EL	6.9	0.80	0.273	1.22	70'	EL	34.5	
		SNS5A	35.550	--	1.191	42.346	1.4	0.273	1.53	70'	EL	34.5	0.507	2.06	70'	EL	6.9	0.80	0.273	1.19	70'	EL	34.5	
		SNS6A	39.950	--	1.095	43.747	1.4	0.273	1.41	70'	EL	34.5	0.507	1.88	70'	EL	6.9	0.80	0.273	1.10	70'	EL	34.5	
	SNS7B	42.000	--	1.043	43.801	1.4	0.273	1.34	70'	EL	34.5	0.507	1.85	70'	EL	6.9	0.80	0.273	1.04	70'	EL	34.5		
	TTST	TNAGRIT3	33.000	--	1.336	44.087	1.4	0.273	1.72	70'	EL	34.5	0.507	2.23	70'	EL	6.9	0.80	0.273	1.34	70'	EL	34.5	
		TNT4A	33.075	--	1.342	44.401	1.4	0.273	1.72	70'	EL	34.5	0.507	2.17	70'	EL	6.9	0.80	0.273	1.34	70'	EL	34.5	
		TNT6A	41.600	--	1.1	45.746	1.4	0.273	1.41	70'	EL	34.5	0.507	1.98	70'	EL	6.9	0.80	0.273	1.10	70'	EL	34.5	
		TNT7A	42.000	--	1.106	46.462	1.4	0.273	1.42	70'	EL	34.5	0.507	1.94	70'	EL	6.9	0.80	0.273	1.11	70'	EL	34.5	
		TNT7B	42.000	--	1.147	48.18	1.4	0.273	1.47	70'	EL	34.5	0.507	1.8	70'	EL	6.9	0.80	0.273	1.15	70'	EL	34.5	
		TNAGRIT4	43.000	--	1.089	46.838	1.4	0.273	1.4	70'	EL	34.5	0.507	1.74	70'	EL	6.9	0.80	0.273	1.09	70'	EL	34.5	
TNAGT5A		45.000	--	1.026	46.175	1.4	0.273	1.32	70'	EL	34.5	0.507	1.74	70'	EL	6.9	0.80	0.273	1.03	70'	EL	34.5		
TNAGT5B	45.000	3	1.013	45.579	1.4	0.273	1.3	70'	EL	34.5	0.507	1.66	70'	EL	6.9	0.80	0.273	1.01	70'	EL	34.5			

LOAD FACTORS:

DESIGN LOAD RATING FACTORS	LIMIT STATE	γ_{DC}	γ_{DW}
	STRENGTH I	1.25	1.50
	SERVICE III	1.00	1.00

NOTES:

MINIMUM RATING FACTORS ARE BASED ON THE STRENGTH I AND SERVICE III LIMIT STATES.
ALLOWABLE STRESSES FOR SERVICE III LIMIT STATE ARE AS REQUIRED FOR DESIGN.

COMMENTS:

- 1.
- 2.
- 3.
- 4.

CONTROLLING LOAD RATING

1 DESIGN LOAD RATING (HL-93)

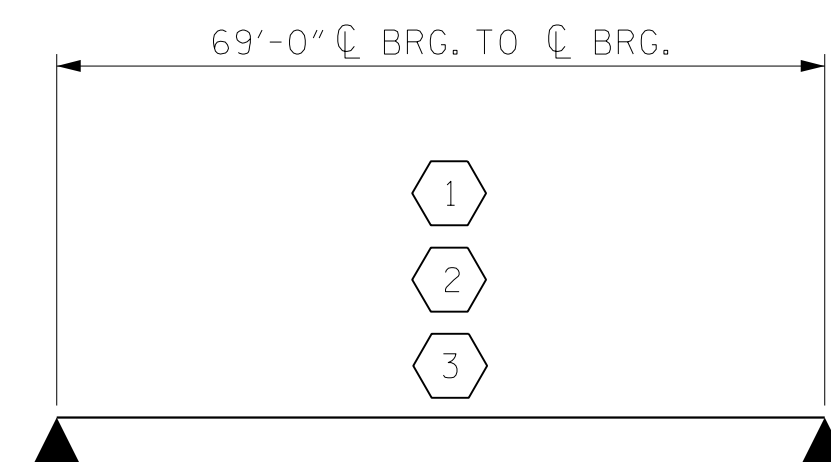
2 DESIGN LOAD RATING (HS-20)

3 LEGAL LOAD RATING **

** SEE CHART FOR VEHICLE TYPE

GIRDER LOCATION

I - INTERIOR GIRDER
EL - EXTERIOR LEFT GIRDER
ER - EXTERIOR RIGHT GIRDER



LRFR SUMMARY
FOR SPAN A

PROJECT NO. 17BP.3.R.55
ONSLOW COUNTY
STATION: 16+65.00 -L-

SHEET 1 OF 2



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD
LRFR SUMMARY FOR
70' CORED SLAB UNIT
90° SKEW
(NON-INTERSTATE TRAFFIC)

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-4
1			3			TOTAL SHEETS
2			4			20

DOCUMENT NOT CONSIDERED
FINAL UNLESS ALL
SIGNATURES COMPLETED

ASSEMBLED BY : PDS	DATE : 07/2017
CHECKED BY : TLC	DATE : 09/2017
DRAWN BY : CVC 6/10	.
CHECKED BY : DNS 6/10	.

LOAD AND RESISTANCE FACTOR RATING (LRFD) SUMMARY FOR PRESTRESSED CONCRETE GIRDERS

LEVEL	VEHICLE	WEIGHT (W) (TONS)	CONTROLLING LOAD RATING	MINIMUM RATING FACTORS (RF)	TONS = W X RF	STRENGTH I LIMIT STATE										SERVICE III LIMIT STATE						COMMENT NUMBER		
						MOMENT					SHEAR					MOMENT								
						LIVELOAD FACTORS	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	LIVELOAD FACTORS	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION		DISTANCE FROM LEFT END OF SPAN (ft)	
DESIGN LOAD RATING	HL-93(Inv)	N/A	1	1.037	--	1.75	0.283	1.83	30'	EL	14.5	0.574	1.04	30'	EL	1.45	0.80	0.283	1.58	30'	EL	14.5		
	HL-93(0pr)	N/A	--	1.344	--	1.35	0.283	2.38	30'	EL	14.5	0.574	1.34	30'	EL	1.45	N/A	--	--	--	--	--		
	HS-20(Inv)	36.000	2	1.183	42.587	1.75	0.283	2.53	30'	EL	11.6	0.574	1.18	30'	EL	1.45	0.80	0.283	2.20	30'	EL	11.6		
	HS-20(0pr)	36.000	--	1.533	55.205	1.35	0.283	3.28	30'	EL	11.6	0.574	1.53	30'	EL	1.45	N/A	--	--	--	--	--		
LEGAL LOAD RATING	SV	SNSH	13.500	--	2.895	39.081	1.4	0.283	5.18	30'	EL	14.5	0.574	2.89	30'	EL	1.45	0.80	0.283	3.56	30'	EL	14.5	
		SNGARBS2	20.000	--	2.240	44.792	1.4	0.283	4.53	30'	EL	11.6	0.574	2.24	30'	EL	1.45	0.80	0.283	3.15	30'	EL	11.6	
		SNAGRIS2	22.000	--	2.157	47.463	1.4	0.283	4.6	30'	EL	11.6	0.574	2.16	30'	EL	1.45	0.80	0.283	3.20	30'	EL	11.6	
		SNCOTTS3	27.250	--	1.462	39.849	1.4	0.283	2.6	30'	EL	14.5	0.574	1.46	30'	EL	1.45	0.80	0.283	1.79	30'	EL	14.5	
		SNAGGRS4	34.925	--	1.346	46.999	1.4	0.283	2.5	30'	EL	14.5	0.574	1.35	30'	EL	1.45	0.80	0.283	1.72	30'	EL	14.5	
		SNS5A	35.550	--	1.427	50.733	1.4	0.283	2.42	30'	EL	14.5	0.574	1.43	30'	EL	1.45	0.80	0.283	1.67	30'	EL	14.5	
		SNS6A	39.950	--	1.341	53.59	1.4	0.283	2.29	30'	EL	14.5	0.574	1.34	30'	EL	1.45	0.80	0.283	1.58	30'	EL	14.5	
	TTST	SNS7B	42.000	--	1.369	57.505	1.4	0.283	2.23	30'	EL	14.5	0.574	1.37	30'	EL	1.45	0.80	0.283	1.53	30'	EL	14.5	
		TNAGRIT3	33.000	--	1.593	52.58	1.4	0.283	2.97	30'	EL	14.5	0.574	1.59	30'	EL	1.45	0.80	0.283	2.04	30'	EL	14.5	
		TNT4A	33.075	--	1.483	49.043	1.4	0.283	2.82	30'	EL	14.5	0.574	1.48	30'	EL	1.45	0.80	0.283	1.94	30'	EL	14.5	
		TNT6A	41.600	--	1.433	59.622	1.4	0.283	2.56	30'	EL	14.5	0.574	1.43	30'	EL	1.45	0.80	0.283	1.76	30'	EL	14.5	
		TNT7A	42.000	--	1.363	57.264	1.4	0.283	2.64	30'	EL	14.5	0.574	1.36	30'	EL	1.45	0.80	0.283	1.82	30'	EL	14.5	
		TNT7B	42.000	--	1.331	55.915	1.4	0.283	2.49	30'	EL	14.5	0.574	1.33	30'	EL	1.45	0.80	0.283	1.72	30'	EL	14.5	
		TNAGRIT4	43.000	--	1.287	55.356	1.4	0.283	2.58	30'	EL	14.5	0.574	1.29	30'	EL	1.45	0.80	0.283	1.78	30'	EL	14.5	
TNAGT5A	45.000	--	1.381	62.151	1.4	0.283	2.5	30'	EL	14.5	0.574	1.38	30'	EL	1.45	0.80	0.283	1.72	30'	EL	14.5			
TNAGT5B	45.000	3	1.212	54.54	1.4	0.283	2.41	30'	EL	11.6	0.574	1.21	30'	EL	1.45	0.80	0.283	1.66	30'	EL	11.6			

LOAD FACTORS:

DESIGN LOAD RATING FACTORS	LIMIT STATE	γ_{DC}	γ_{DW}
	STRENGTH I	1.25	1.50
	SERVICE III	1.00	1.00

NOTES:

MINIMUM RATING FACTORS ARE BASED ON THE STRENGTH I AND SERVICE III LIMIT STATES.

ALLOWABLE STRESSES FOR SERVICE III LIMIT STATE ARE AS REQUIRED FOR DESIGN.

COMMENTS:

- 1.
- 2.
- 3.
- 4.

CONTROLLING LOAD RATING

1 DESIGN LOAD RATING (HL-93)

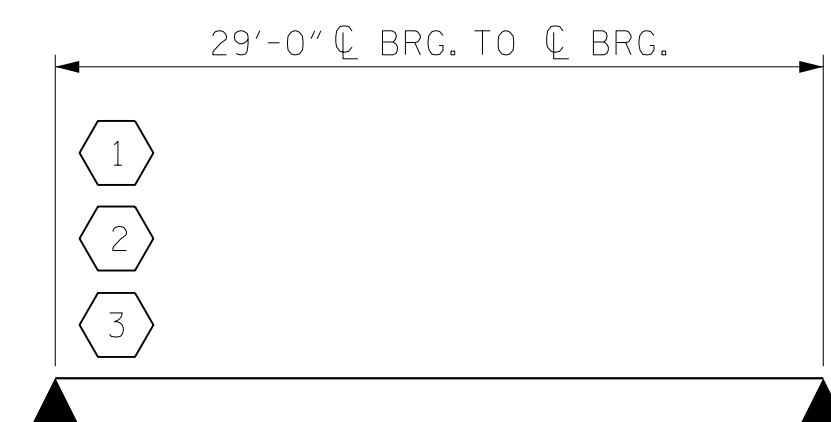
2 DESIGN LOAD RATING (HS-20)

3 LEGAL LOAD RATING **

** SEE CHART FOR VEHICLE TYPE

GIRDER LOCATION

I - INTERIOR GIRDER
EL - EXTERIOR LEFT GIRDER
ER - EXTERIOR RIGHT GIRDER



LRFR SUMMARY
FOR SPAN B

PROJECT NO. 17BP.3.R.55
ONSLOW COUNTY
STATION: 16+65.00 -L-

SHEET 2 OF 2

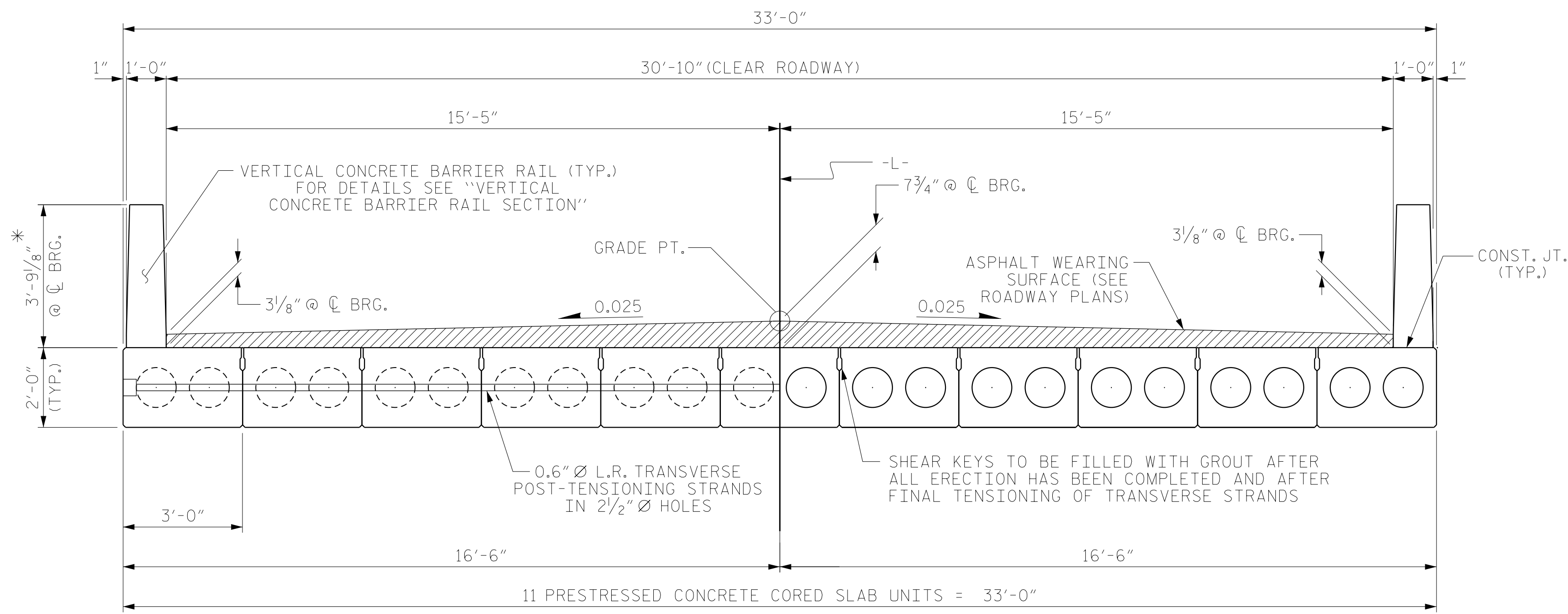
ASSEMBLED BY : PDS	DATE : 07/2017
CHECKED BY : TLC	DATE : 09/2017
DRAWN BY : CVC 6/10	
CHECKED BY : DNS 6/10	

DOCUMENT NOT CONSIDERED
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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD
LRFR SUMMARY FOR
30' CORED SLAB UNIT
90° SKEW
(NON-INTERSTATE TRAFFIC)

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-5
1			3			TOTAL SHEETS
2			4			20



HALF SECTION AT INTERMEDIATE DIAPHRAGMS

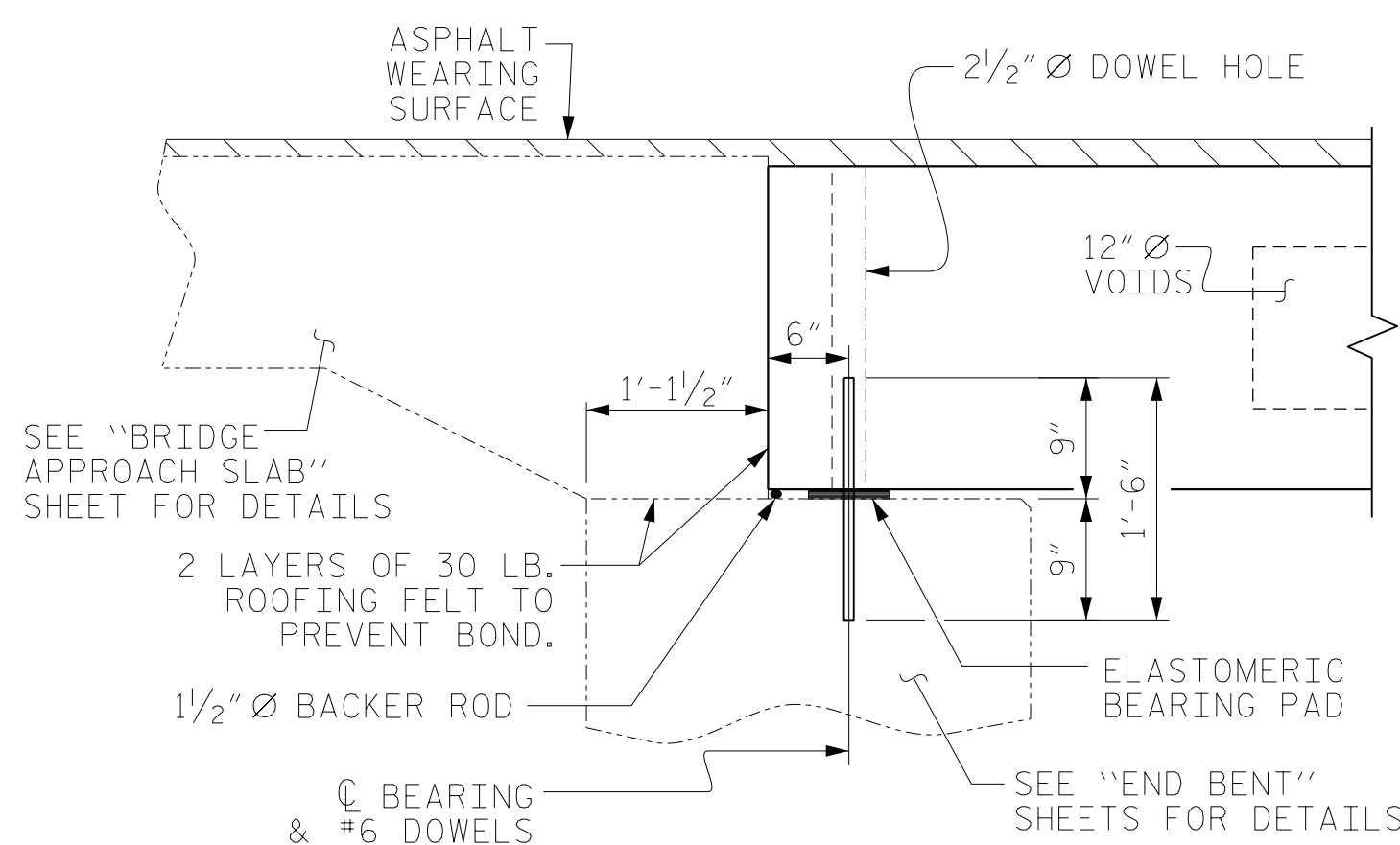
TYPICAL SECTION (SPAN A)

HALF SECTION THROUGH VOIDS

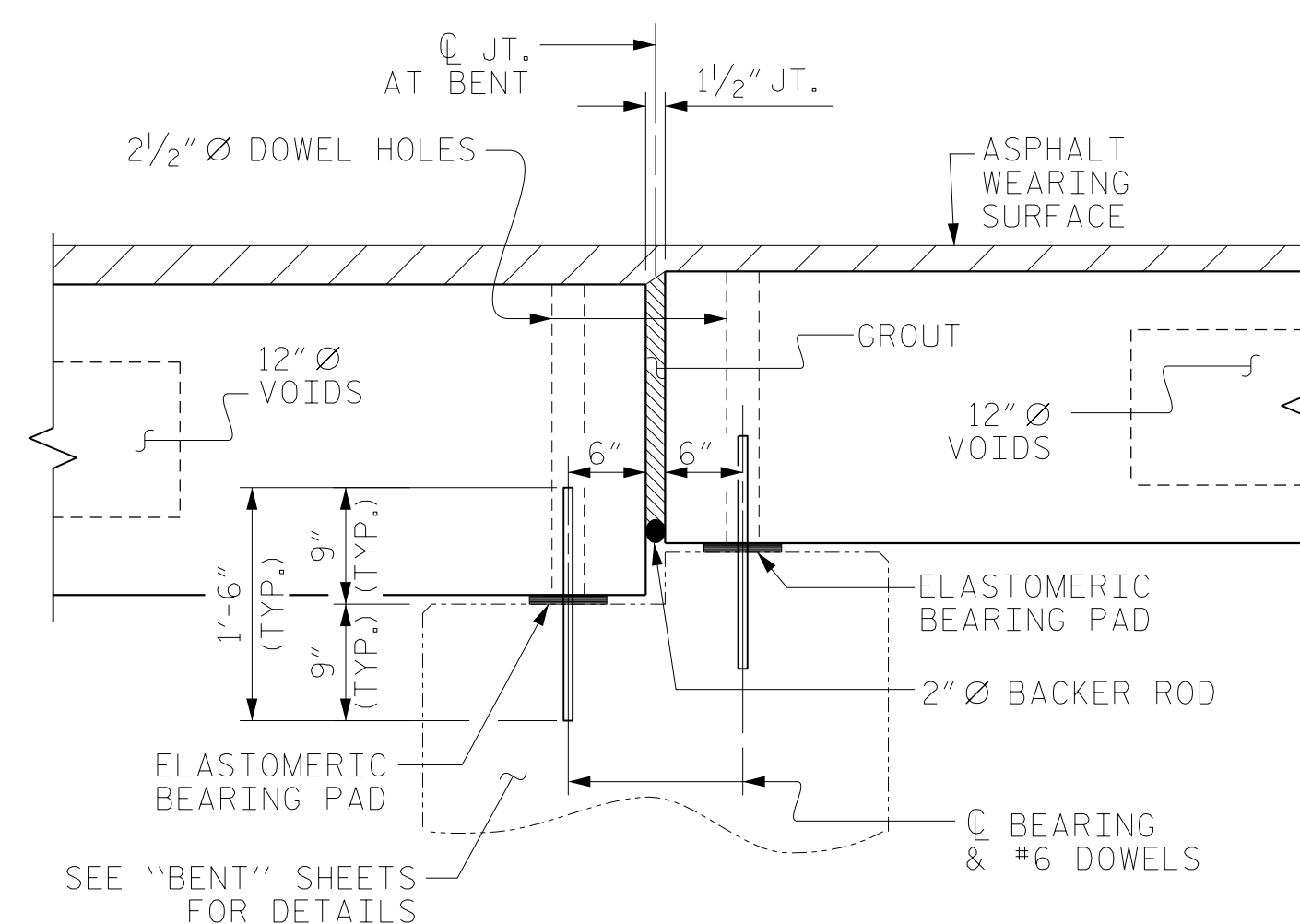
* - THE MAXIMUM BARRIER RAIL HEIGHT AND ASPHALT THICKNESS IS SHOWN. THE HEIGHT OF THE BARRIER RAIL AND ASPHALT THICKNESS VARIES WHILE THE TOP OF THE BARRIER RAIL FOLLOWS THE PROFILE OF THE GUTTERLINE. FOR RAIL HEIGHT DETAILS AND ASPHALT THICKNESS, SEE THE "VERTICAL CONCRETE BARRIER RAIL SECTION" DETAIL.

FIXED END

FIXED END

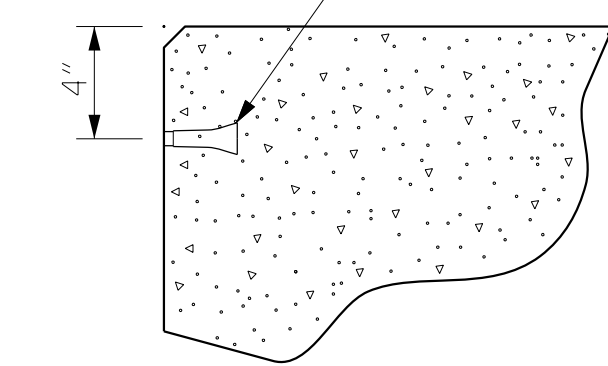


SECTION AT END BENT

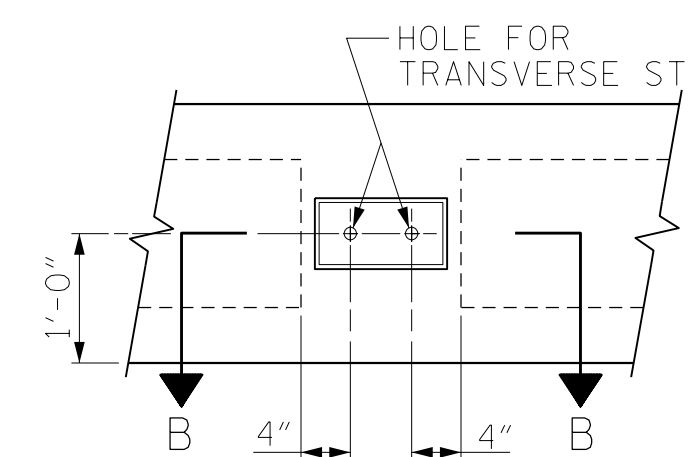


SECTION AT BENT NO. 1

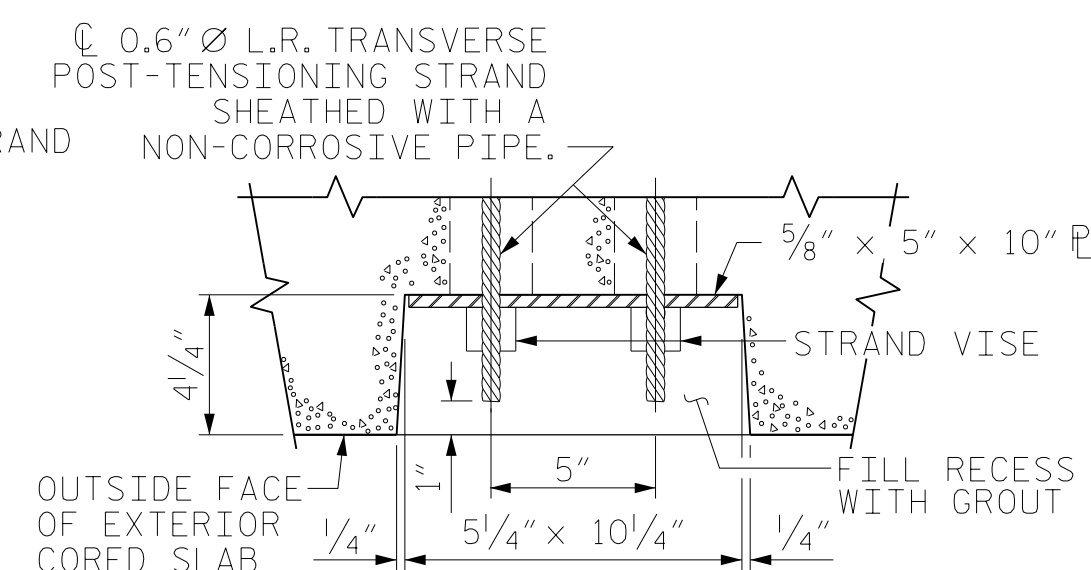
PERMITTED THREADED INSERT CAST IN OUTSIDE FACE OF EXTERIOR UNIT AND RECESSED 3/8" SIZE TO BE DETERMINED BY CONTRACTOR.



THREADED INSERT DETAIL

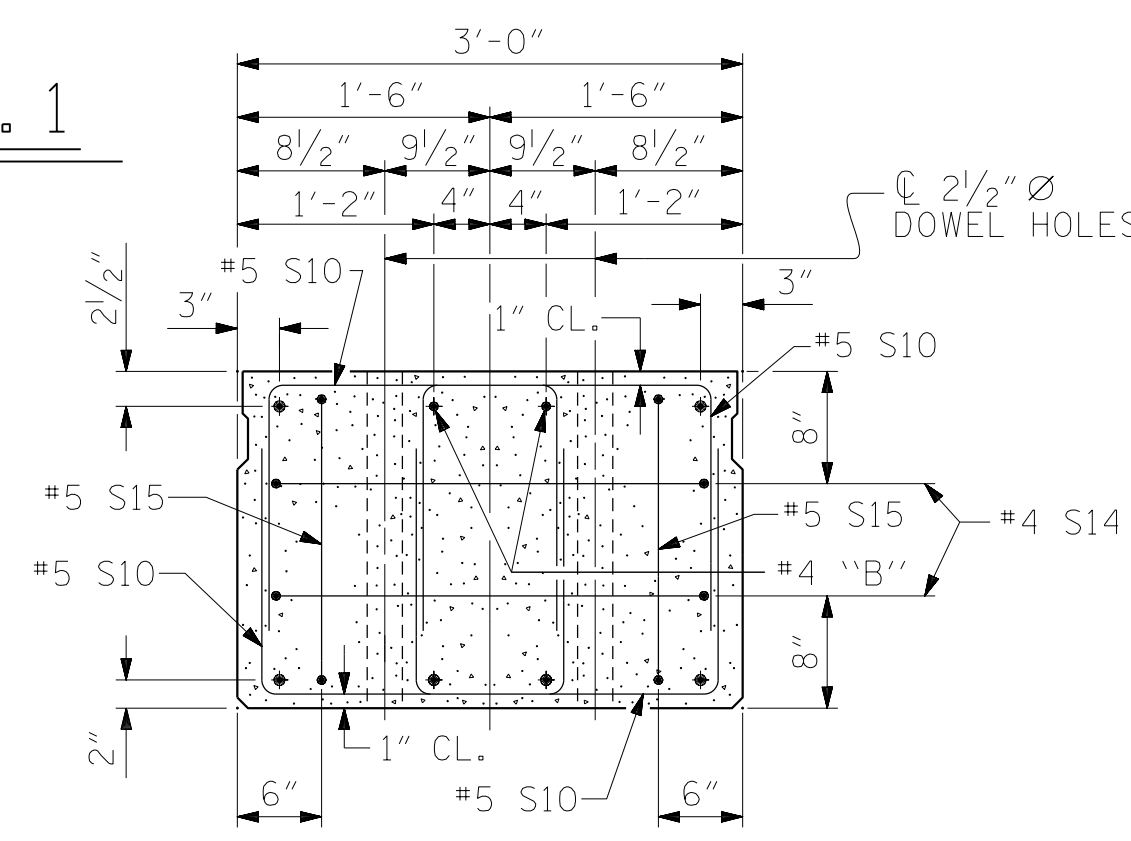


ELEVATION VIEW



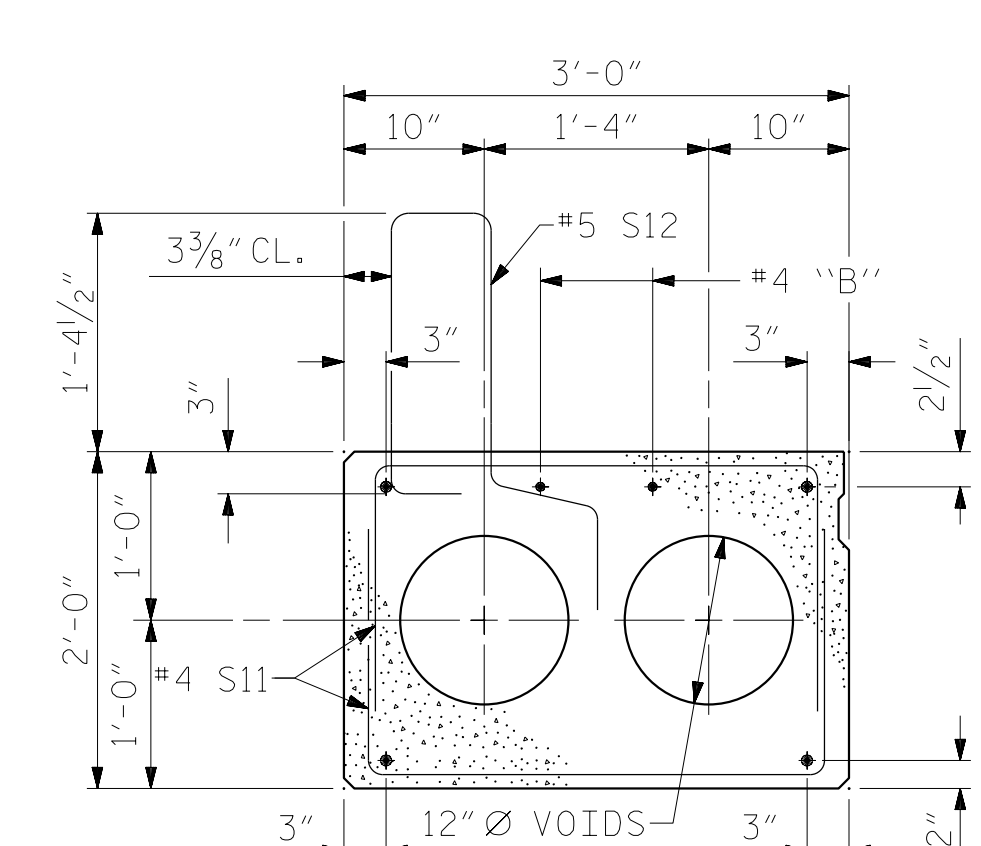
SECTION B-B

GROUTED RECESS AT END OF POST-TENSIONED STRAND CORED SLABS



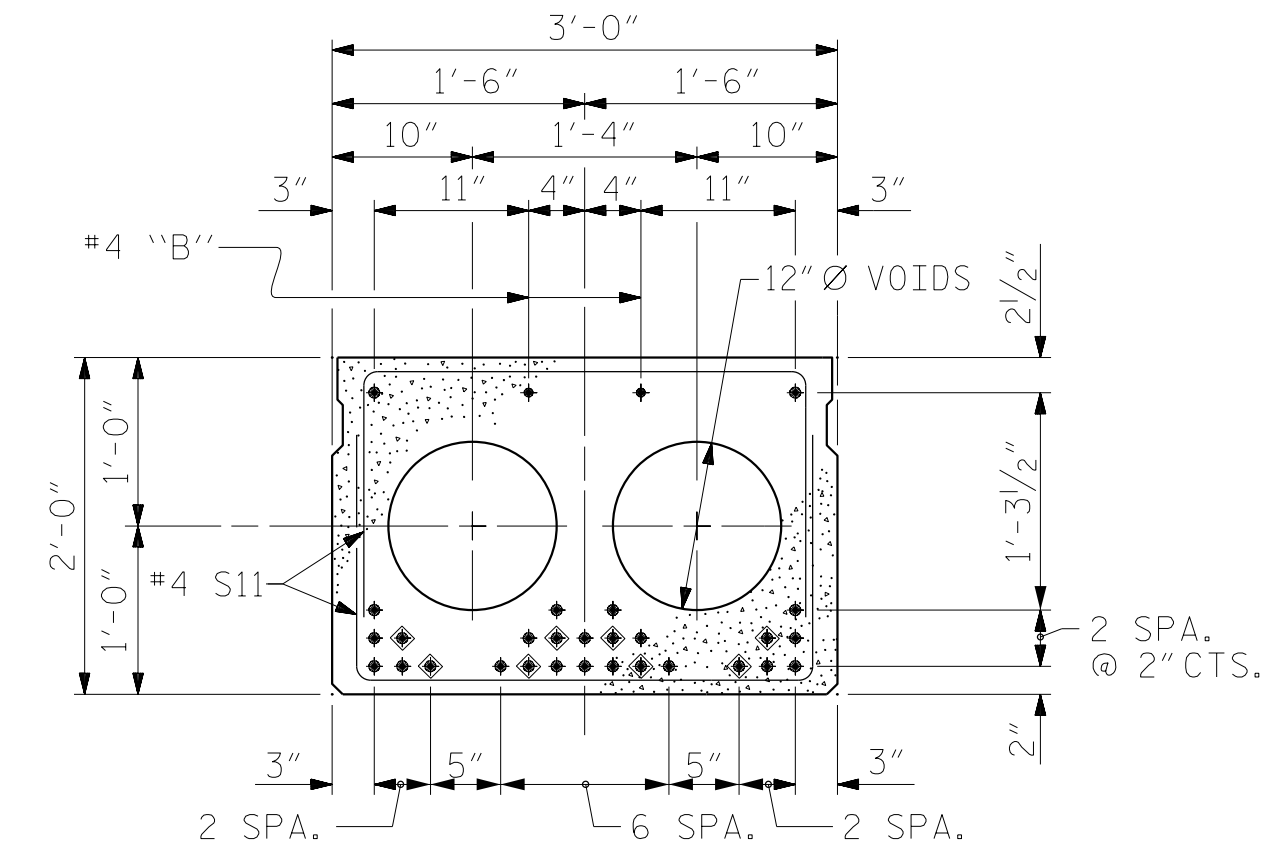
END ELEVATION

SHOWING PLACEMENT OF DOUBLE STIRRUPS AND LOCATION OF DOWEL HOLES. (STRAND LAYOUT NOT SHOWN.) INTERIOR SLAB UNIT SHOWN-EXTERIOR SLAB UNIT SIMILAR EXCEPT SHEAR KEY LOCATION.



EXTERIOR SLAB SECTION

(FOR PRESTRESSED STRAND LAYOUT, SEE INTERIOR SLAB SECTION.)



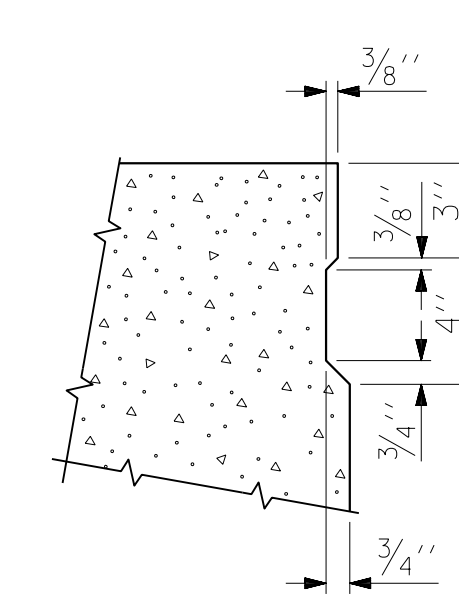
INTERIOR SLAB SECTION (70' UNIT)

(28 STRANDS REQUIRED)

0.6" Ø LOW RELAXATION STRAND LAYOUT

◆ BOND SHALL BE BROKEN ON THESE STRANDS FOR A DISTANCE OF 12'-0" FROM END OF CORED SLAB UNIT. SEE STANDARD SPECIFICATIONS, ARTICLE 1078-7.

DEBONDING LEGEND



SHEAR KEY DETAIL

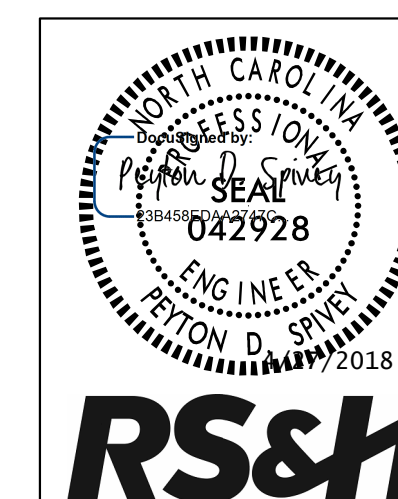
NOTE: OMIT SHEAR KEY ON OUTSIDE FACE OF EXTERIOR CORED SLABS.

PROJECT NO. 17BP.3.R.55

ONslow COUNTY

STATION: 16+65.00 -L-

SHEET 1 OF 5



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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD
3'-0" X 2'-0"
PRESTRESSED CONCRETE
CORED SLAB UNIT
(SPAN A)

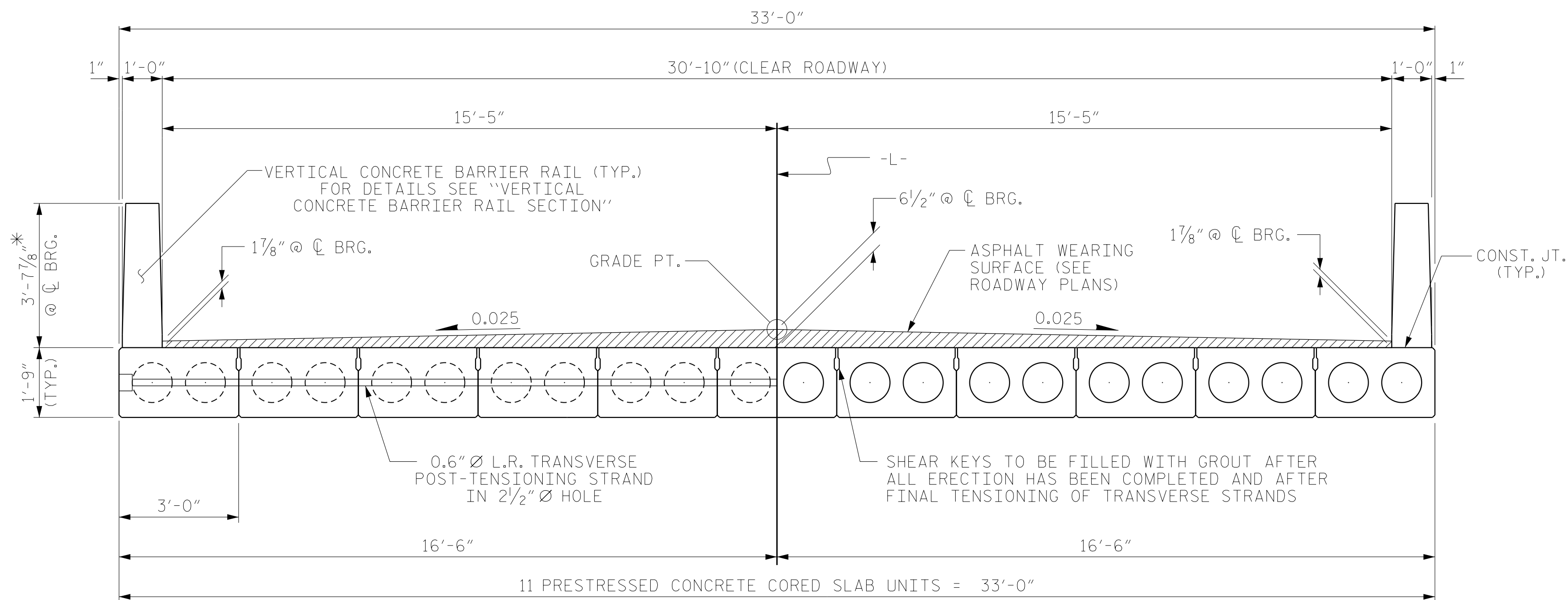
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-6
1			3			TOTAL SHEETS
2			4			20

ASSEMBLED BY :	PDS	DATE :	07/2017
CHECKED BY :	TLC	DATE :	09/2017
DRAWN BY :	MAA 6/10	REV.	9/14 MAA/TMG
CHECKED BY :	MKT 7/10		

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NOTES

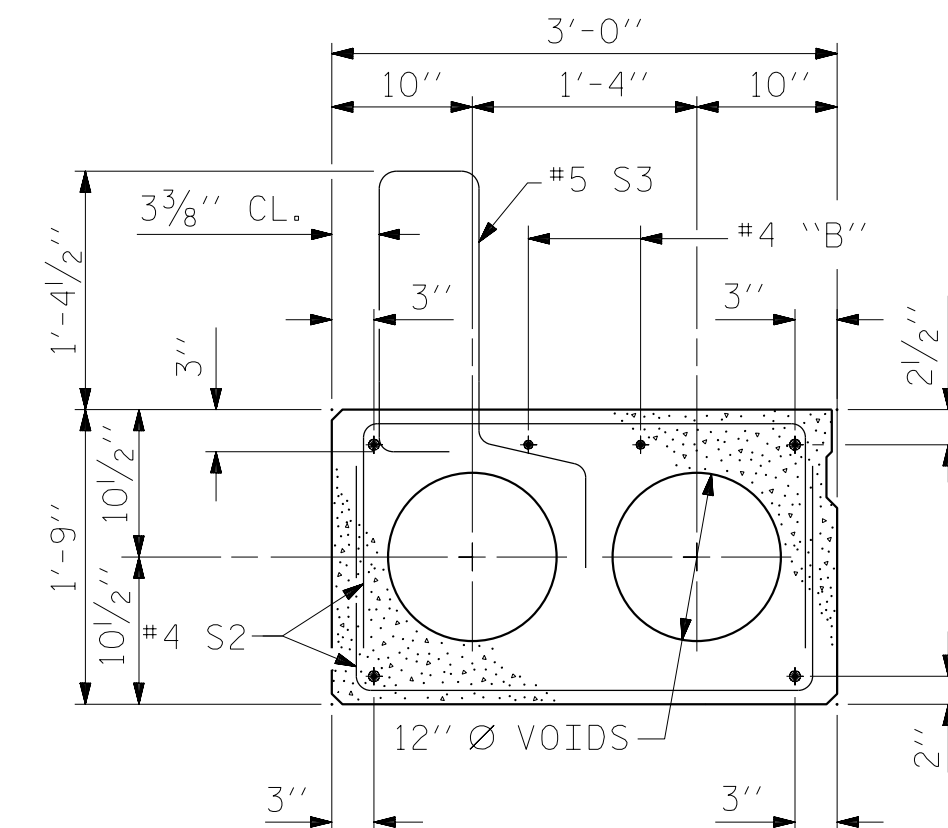
FOR SECTION AT BENT, SEE SHEET 1 OF 5.



HALF SECTION AT INTERMEDIATE DIAPHRAGMS HALF SECTION THROUGH VOIDS

TYPICAL SECTION (SPAN B)

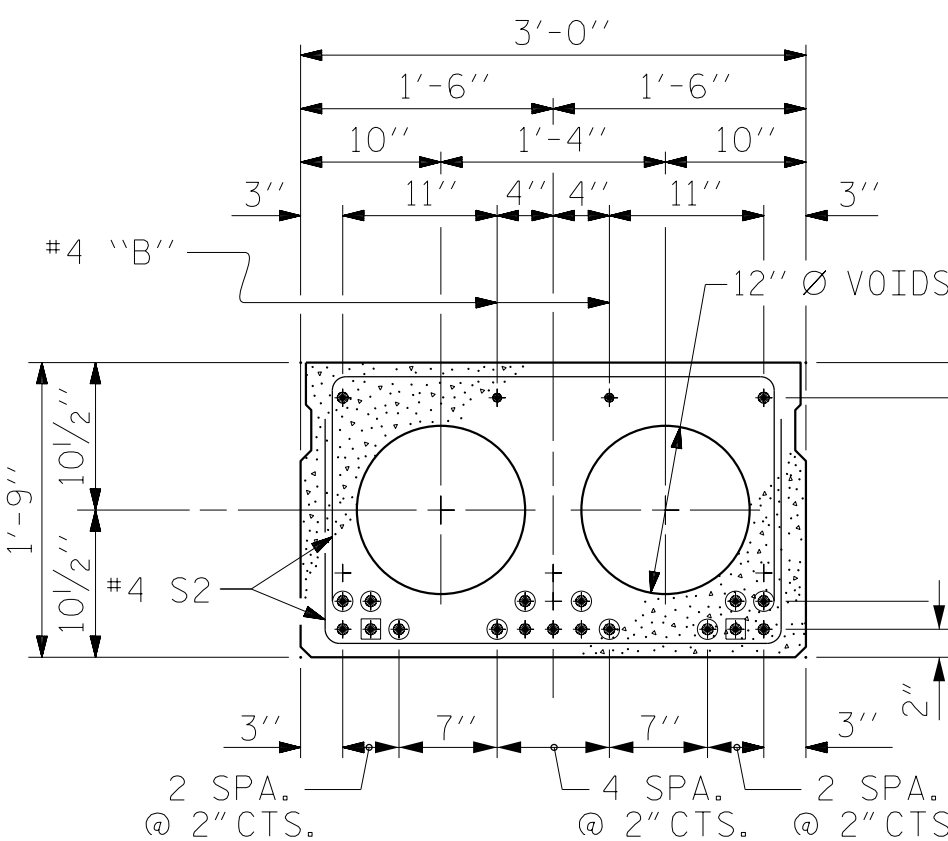
* - THE MAXIMUM BARRIER RAIL HEIGHT AND ASPHALT THICKNESS IS SHOWN. THE HEIGHT OF THE BARRIER RAIL AND ASPHALT THICKNESS VARIES WHILE THE TOP OF THE BARRIER RAIL FOLLOWS THE PROFILE OF THE GUTTERLINE. FOR RAIL HEIGHT DETAILS AND ASPHALT THICKNESS SEE THE "VERTICAL CONCRETE BARRIER RAIL SECTION" DETAIL.



EXT. SLAB SECTION

(FOR PRESTRESSED STRAND LAYOUT, SEE INTERIOR SLAB SECTION.)

- BOND SHALL BE BROKEN ON THESE STRANDS FOR A DISTANCE OF 2'-0" FROM END OF CORED SLAB UNIT. SEE STANDARD SPECIFICATIONS, ARTICLE 1078-7.
- OPTIONAL FULL LENGTH DEBONDED STRANDS. THESE STRANDS ARE NOT REQUIRED. IF THE FABRICATOR CHOOSES TO INCLUDE THESE STRANDS IN THE CORED SLAB UNIT, THE STRANDS SHALL BE DEBONDED FOR THE FULL LENGTH OF THE UNIT AT NO ADDITIONAL COST. SEE STANDARD SPECIFICATIONS, ARTICLE 1078-7.



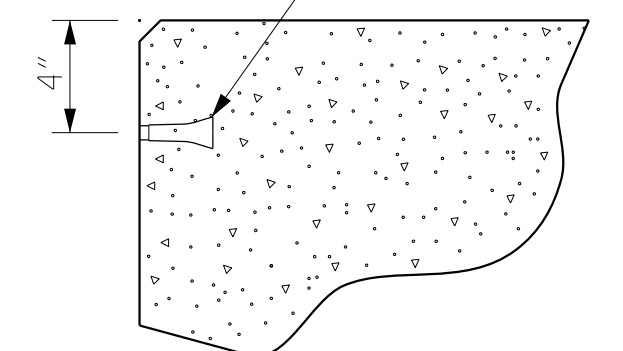
INTERIOR SLAB SECTION (30' UNIT)

(9 STRANDS REQUIRED)

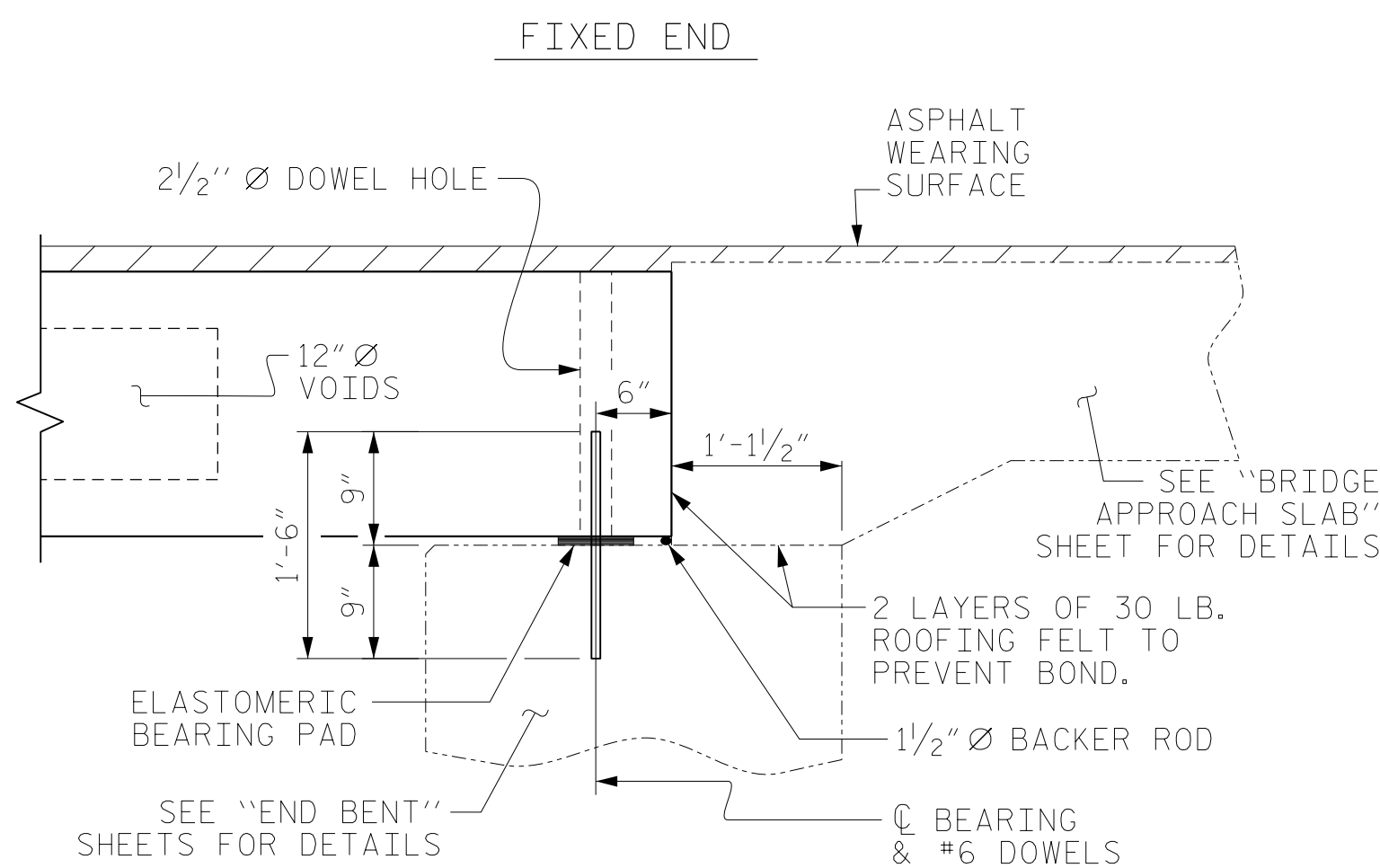
0.6" Ø LOW RELAXATION STRAND LAYOUT

DEBONDING LEGEND

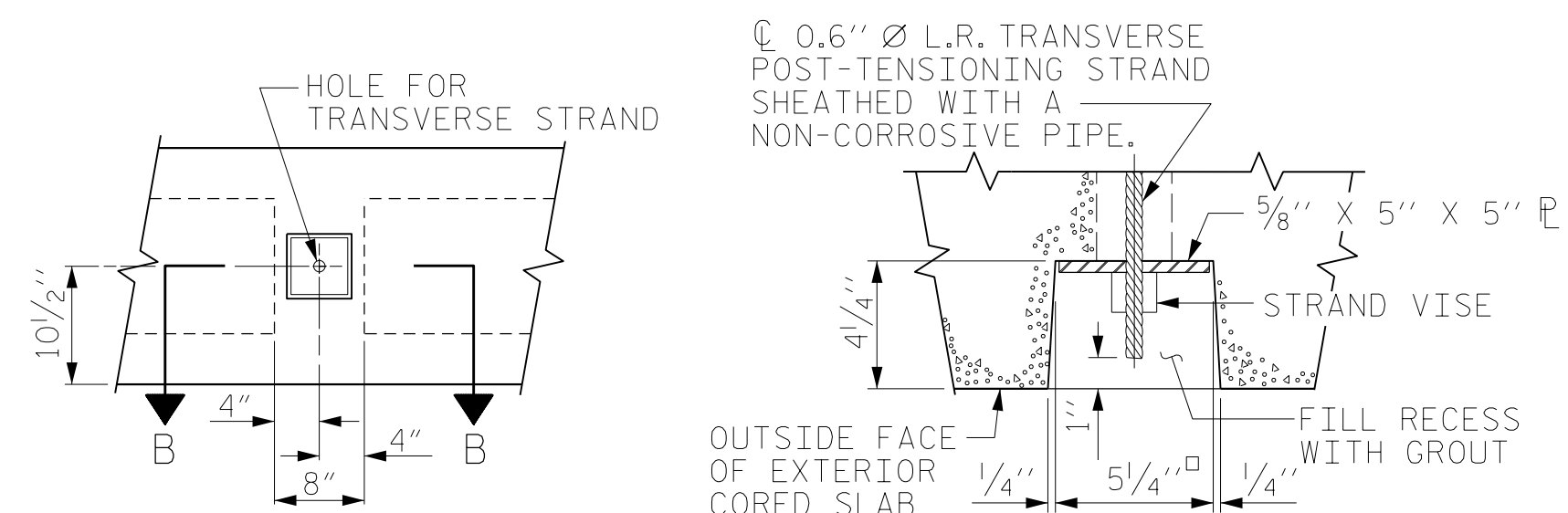
PERMITTED THREADED INSERT CAST IN OUTSIDE FACE OF EXTERIOR UNIT AND RECESSED 3/8" SIZE TO BE DETERMINED BY CONTRACTOR.



THREADED INSERT DETAIL



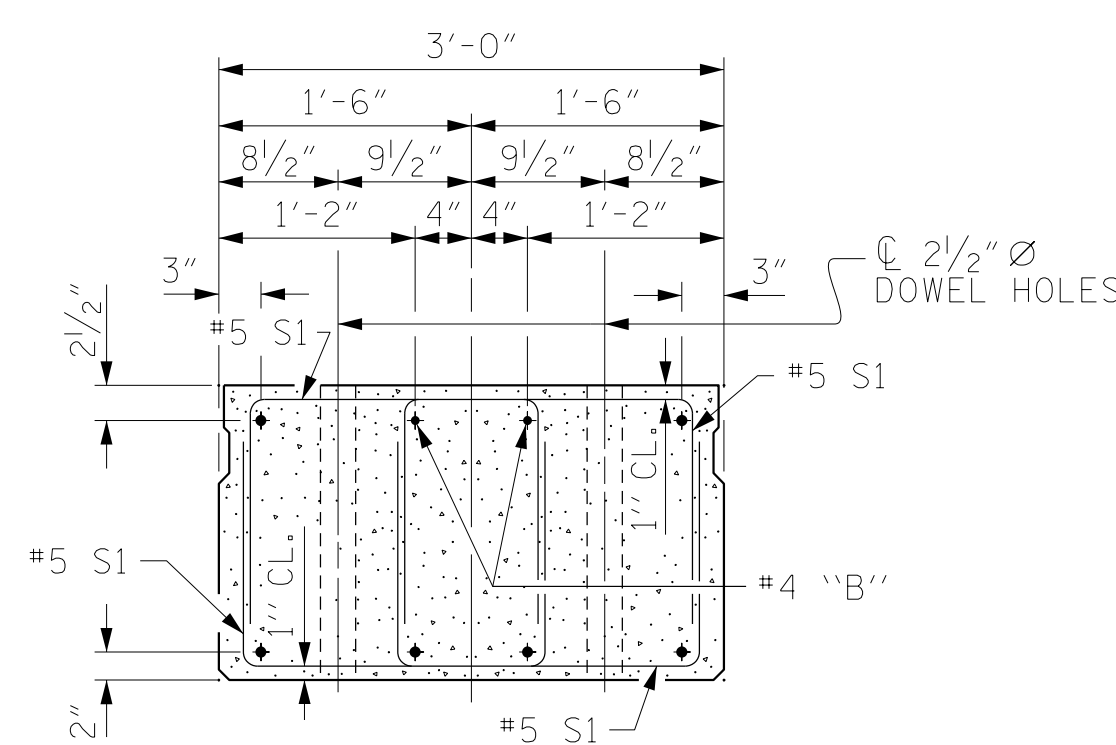
SECTION AT END BENT



ELEVATION VIEW

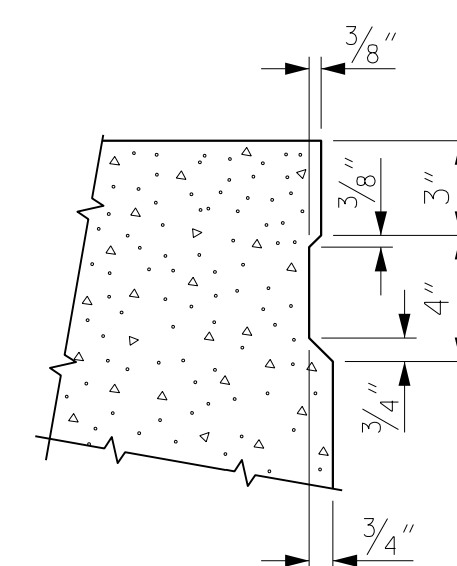
SECTION B-B

GROUTED RECESS AT END OF POST-TENSIONED STRAND OF CORED SLABS



END ELEVATION

SHOWING PLACEMENT OF DOUBLE STIRRUPS AND LOCATION OF DOWEL HOLES. (STRAND LAYOUT NOT SHOWN.) INTERIOR SLAB UNIT SHOWN-EXTERIOR SLAB UNIT SIMILAR EXCEPT SHEAR KEY LOCATION.



SHEAR KEY DETAIL

NOTE: OMIT SHEAR KEY ON OUTSIDE FACE OF EXTERIOR CORED SLABS.

PROJECT NO. 17BP.3.R.55
 ONSLOW COUNTY
 STATION: 16+65.00 -L-

SHEET 2 OF 5



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD
 3'-0" X 1'-9"
 PRESTRESSED CONCRETE
 CORED SLAB UNIT
 90° SKEW (SPAN B)

ASSEMBLED BY :	PDS	DATE :	07/2017
CHECKED BY :	TLC	DATE :	09/2017
DRAWN BY :	DGE 5/09	REV. 9/14	MAA/TMG
CHECKED BY :	BCH 6/09		

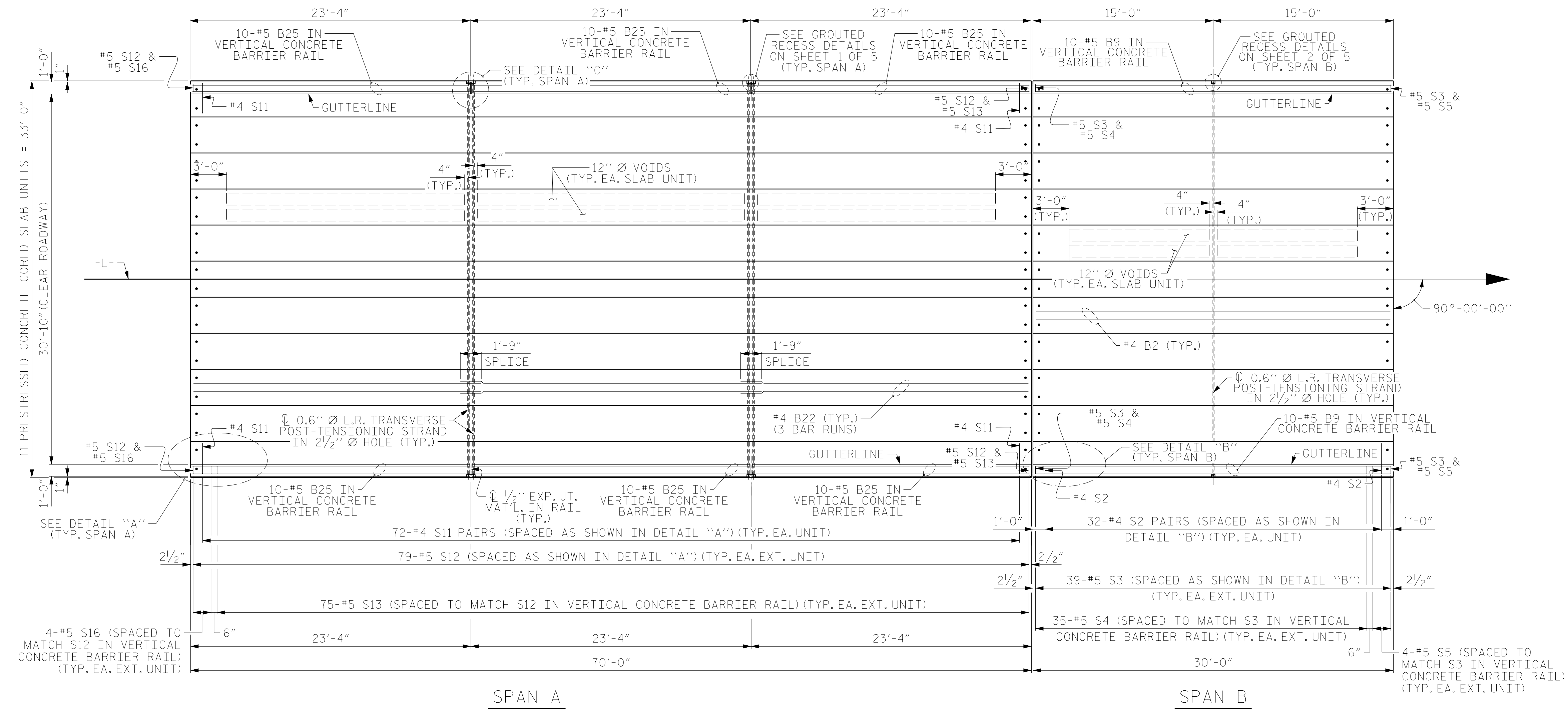
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

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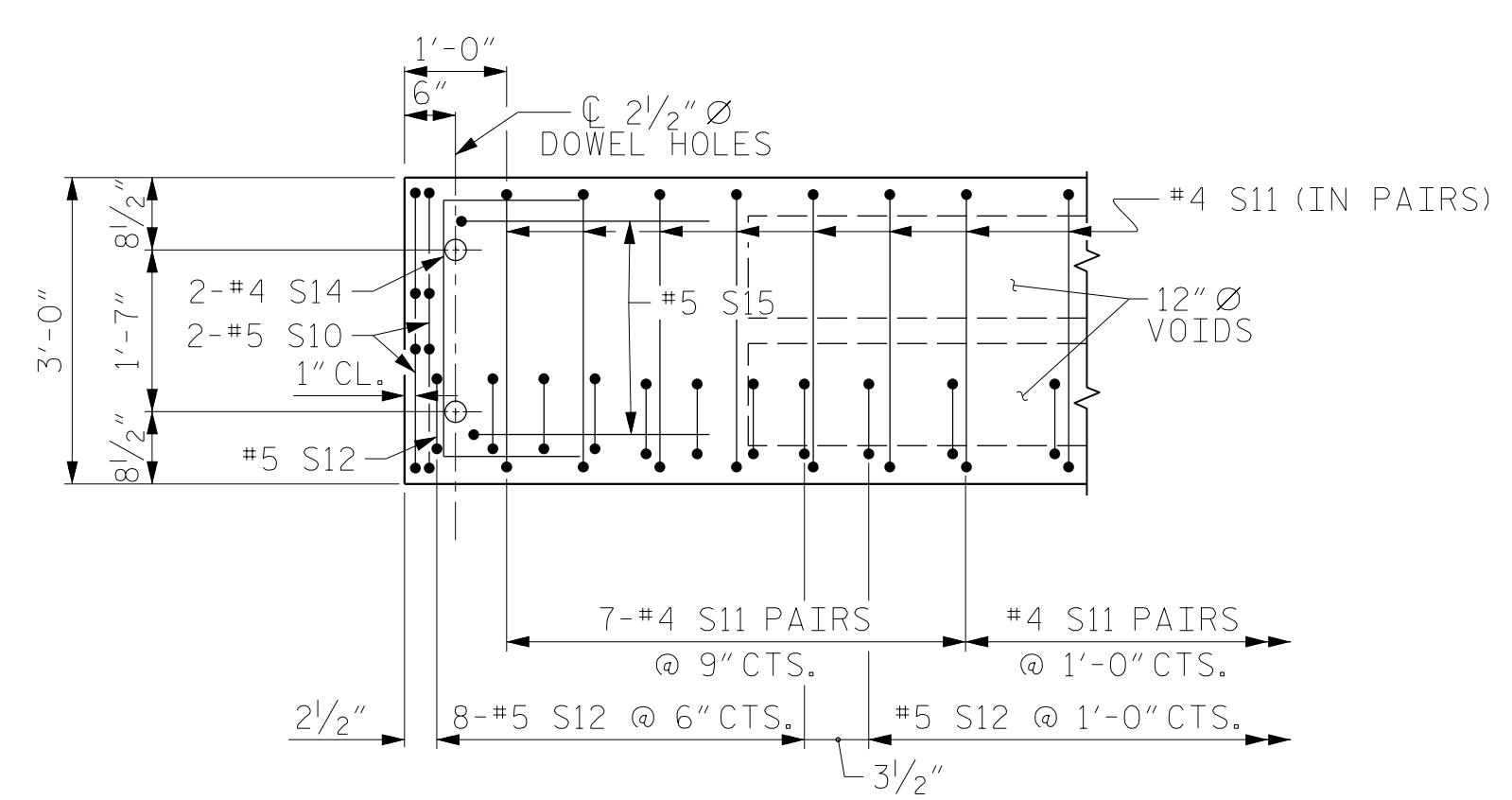
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 8601 Six Forks Road, Suite 260
 Raleigh, NC 27615
 919-926-4100 FAX 919-846-9080
 www.rsandh.com
 North Carolina License Nos. 50737-50463 'C-28

SHEET NO.					
S-7					
TOTAL SHEETS					
20					

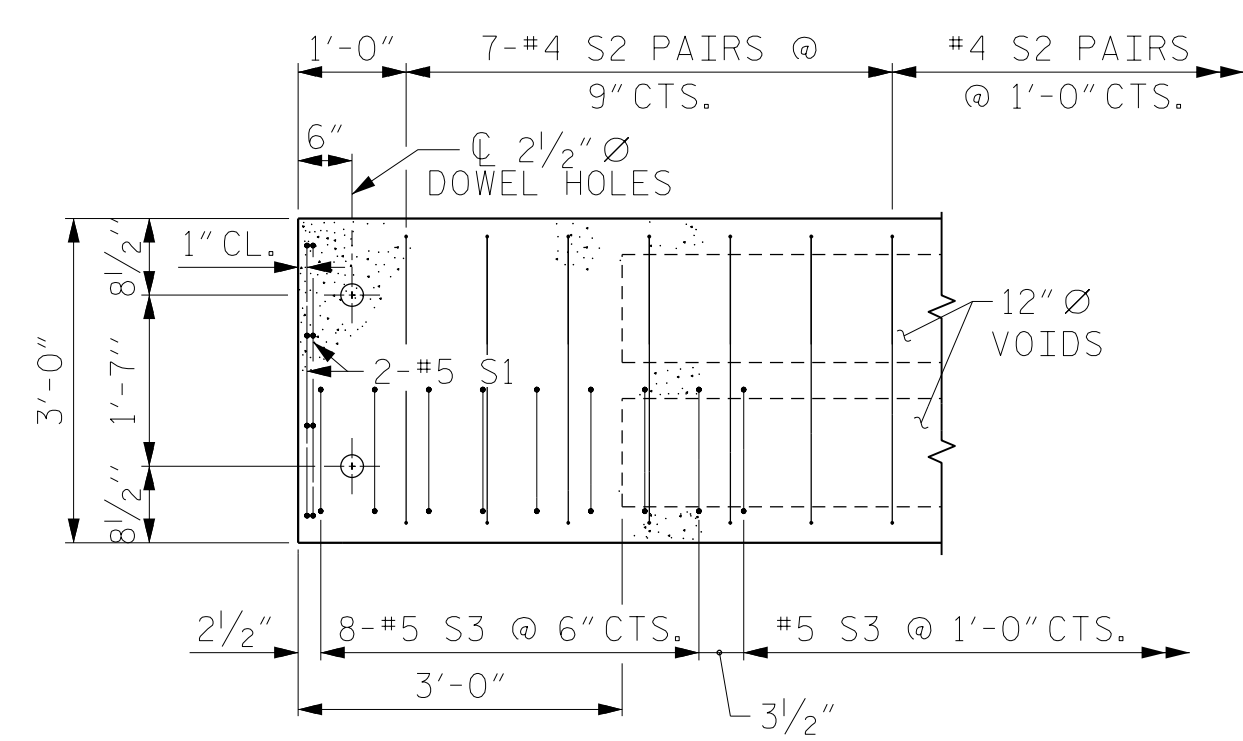
STD. NO. 21" PCS2_33_90S



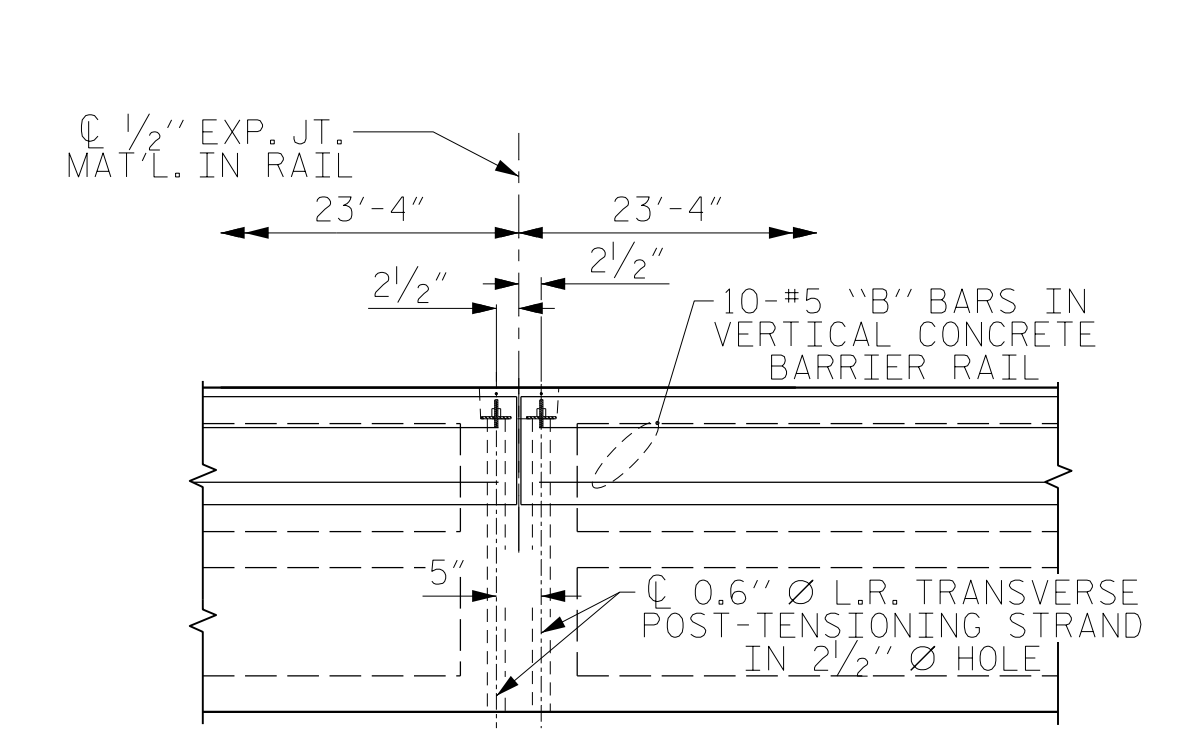
PLAN OF SPANS



DETAIL "A"
(TYPICAL EACH END OF UNIT)
NOTE: EXTERIOR UNIT SHOWN - INTERIOR UNIT SIMILAR EXCEPT OMIT #5 S12 BARS.



DETAIL "B"
(TYPICAL EACH END OF UNIT)
NOTE: EXTERIOR UNIT SHOWN - INTERIOR UNIT SIMILAR EXCEPT OMIT #5 S3 BARS.



DETAIL "C"
#4 S11 BARS MAY BE SHIFTED AS NECESSARY TO MAINTAIN 1" CLEAR TO GROUDED RECESS AND 2 1/2" Ø TRANSVERSE POST-TENSIONING STRAND HOLES

PROJECT NO. 17BP.3.R.55
 ONSLOW COUNTY
 STATION: 16+65.00 -L-
 SHEET 3 OF 5



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE
 PLAN OF SPANS

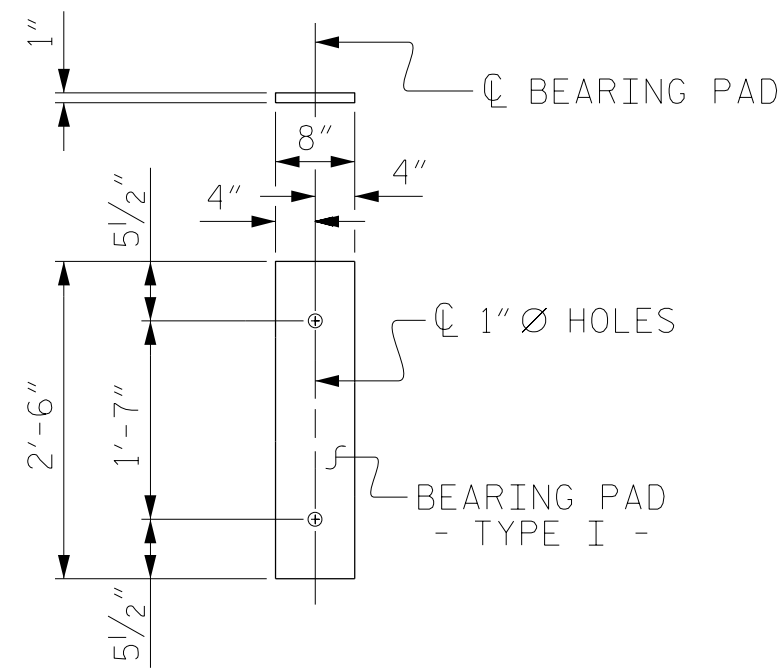
DRAWN BY :	PDS	DATE :	.07/2017
CHECKED BY :	TLC	DATE :	.09/2017
DESIGN ENGINEER OF RECORD:	PDS	DATE :	.07/2017

4/3/2018
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NO.	BY:	DATE:	NO.	BY:	DATE:	S-8
1			3			TOTAL SHEETS
2			4			20



FIXED END
(TYPE I - 22 REQ'D)

ELASTOMERIC BEARING DETAILS

ELASTOMER IN ALL BEARINGS SHALL BE 60 DUROMETER HARDNESS.

GUTTERLINE ASPHALT THICKNESS & RAIL HEIGHT		
	ASPHALT OVERLAY THICKNESS	RAIL HEIGHT
	@ MID-SPAN	@ MID-SPAN
30' UNIT	1 1/16"	3'-7 1/16"

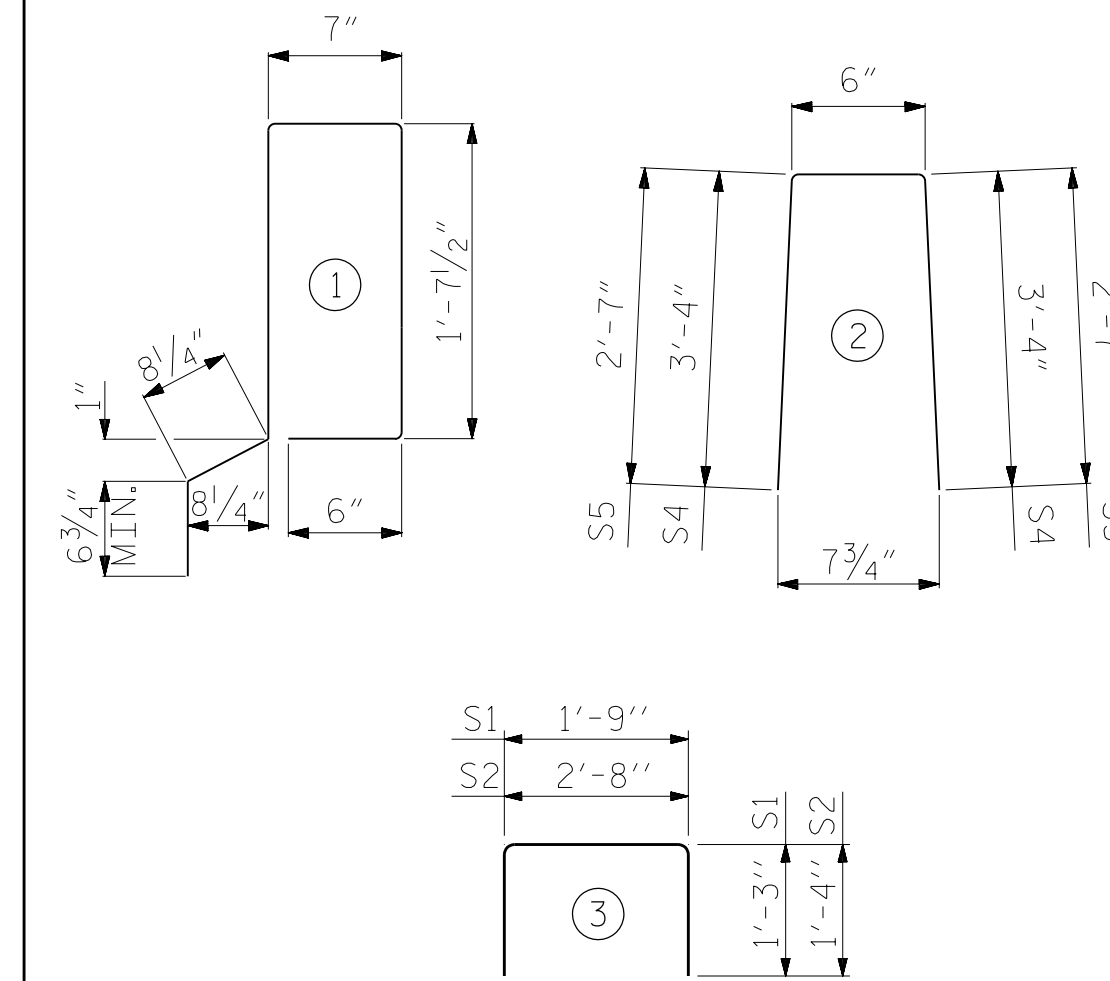
BILL OF MATERIAL FOR ONE 30' CORED SLAB UNIT							
BAR	NUMBER	SIZE	TYPE	EXTERIOR UNIT		INTERIOR UNIT	
				LENGTH	WEIGHT	LENGTH	WEIGHT
B2	2	#4	STR	29'-8"	40	29'-8"	40
S1	8	#5	3	4'-3"	35	4'-3"	35
S2	64	#4	3	5'-4"	228	5'-4"	228
* S3	39	#5	1	5'-7"	227		
REINFORCING STEEL				LBS.		303	
* EPOXY COATED REINFORCING STEEL				LBS.		227	
5000 P.S.I. CONCRETE				CU. YDS.		4.4	
0.6" Ø L.R. STRANDS				No.		9	

DEAD LOAD DEFLECTION AND CAMBER

	3'-0" x 1'-9"
30' CORED SLAB UNIT	0.6" Ø L.R. STRAND
CAMBER (SLAB ALONE IN PLACE)	1/4" ↑
DEFLECTION DUE TO SUPERIMPOSED DEAD LOAD**	1/8" ↓
FINAL CAMBER	1/8" ↑

** INCLUDES FUTURE WEARING SURFACE

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT

CORED SLABS REQUIRED

30' UNIT	NUMBER	LENGTH	TOTAL LENGTH
EXTERIOR C.S.	2	30'-0"	60'-0"
INTERIOR C.S.	9	30'-0"	270'-0"
TOTAL	11	30'-0"	330'-0"

NOTES

ALL PRESTRESSING STRANDS SHALL BE 7-WIRE LOW RELAXATION GRADE 270 STRANDS AND SHALL CONFORM TO AASHTO M203 EXCEPT FOR SAMPLING REQUIREMENTS WHICH SHALL BE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

ALL REINFORCING STEEL CAST WITH THE CORED SLAB SECTIONS SHALL BE GRADE 60 AND SHALL BE INCLUDED IN THE UNIT PRICE BID FOR PRESTRESSED CONCRETE CORED SLABS.

RECESSES FOR TRANSVERSE STRANDS SHALL BE GROUTED AFTER THE TENSIONING OF THE STRANDS.

THE 2 1/2" Ø DOWEL HOLES AT FIXED ENDS OF SLAB SECTIONS SHALL BE FILLED WITH NON-SHRINK GROUT.

THE BACKER RODS SHALL CONFORM TO THE REQUIREMENTS OF TYPE M BOND BREAKER. SEE SECTION 1028 OF THE STANDARD SPECIFICATIONS.

WHEN CORED SLABS ARE CAST, AN INTERNAL HOLD-DOWN SYSTEM SHALL BE EMPLOYED TO PREVENT VOIDS FROM RISING OR MOVING SIDWAYS. AT LEAST SIX WEEKS PRIOR TO CASTING CORED SLABS, THE CONTRACTOR SHALL SUBMIT TO THE ENGINEER FOR REVIEW AND COMMENT, DETAILED DRAWINGS OF THE PROPOSED HOLD-DOWN SYSTEM. IN ADDITION TO STRUCTURAL DETAILS, LOCATION AND SPACING OF THE HOLD-DOWNS SHALL BE INDICATED.

ALL REINFORCING STEEL IN THE VERTICAL CONCRETE BARRIER RAIL SHALL BE EPOXY COATED.

PRESTRESSING STRANDS SHALL BE CUT FLUSH WITH THE CORED SLAB UNIT ENDS.

APPLY EPOXY PROTECTIVE COATING TO CORED SLAB UNIT ENDS.

GROOVED CONTRACTION JOINTS, 1/2" IN DEPTH, SHALL BE TOOLED IN ALL EXPOSED FACES OF THE BARRIER RAIL AND IN ACCORDANCE WITH ARTICLE 825-10(B) OF THE STANDARD SPECIFICATIONS. A CONTRACTION JOINT SHALL BE LOCATED AT EACH THIRD POINT BETWEEN BARRIER RAIL EXPANSION JOINTS. ONLY ONE CONTRACTION JOINT IS REQUIRED AT MIDPOINT OF BARRIER RAIL SEGMENTS LESS THAN 20 FEET IN LENGTH AND NO CONTRACTION JOINTS ARE REQUIRED FOR THOSE SEGMENTS LESS THAN 10 FEET IN LENGTH.

FLAME CUTTING OF THE TRANSVERSE POST-TENSIONING STRAND IS NOT ALLOWED.

THE TRANSFER OF LOAD FROM THE ANCHORAGES TO THE CORED SLAB UNIT SHALL BE DONE WHEN THE CONCRETE HAS REACHED A COMPRESSIVE STRENGTH OF NOT LESS THAN THE REQUIRED STRENGTH SHOWN IN THE "CONCRETE RELEASE STRENGTH" TABLE.

FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

THE PERMITTED THREADED INSERTS ARE DETAILED AS AN OPTION FOR THE CONTRACTOR TO ATTACH FALSEWORK AND FORMWORK DURING CONSTRUCTION.

THE PERMITTED THREADED INSERTS IN THE EXTERIOR UNITS SHALL BE SIZED BY THE CONTRACTOR, SPACED AT 4'-0" CENTERS AND GALVANIZED IN ACCORDANCE WITH SECTION 1076 OF THE STANDARD SPECIFICATIONS. STAINLESS STEEL THREADED INSERTS MAY BE USED AS AN ALTERNATE.

THE PERMITTED THREADED INSERTS SHALL BE GROUTED BY THE CONTRACTOR IMMEDIATELY FOLLOWING REMOVAL OF THE FALSEWORK.

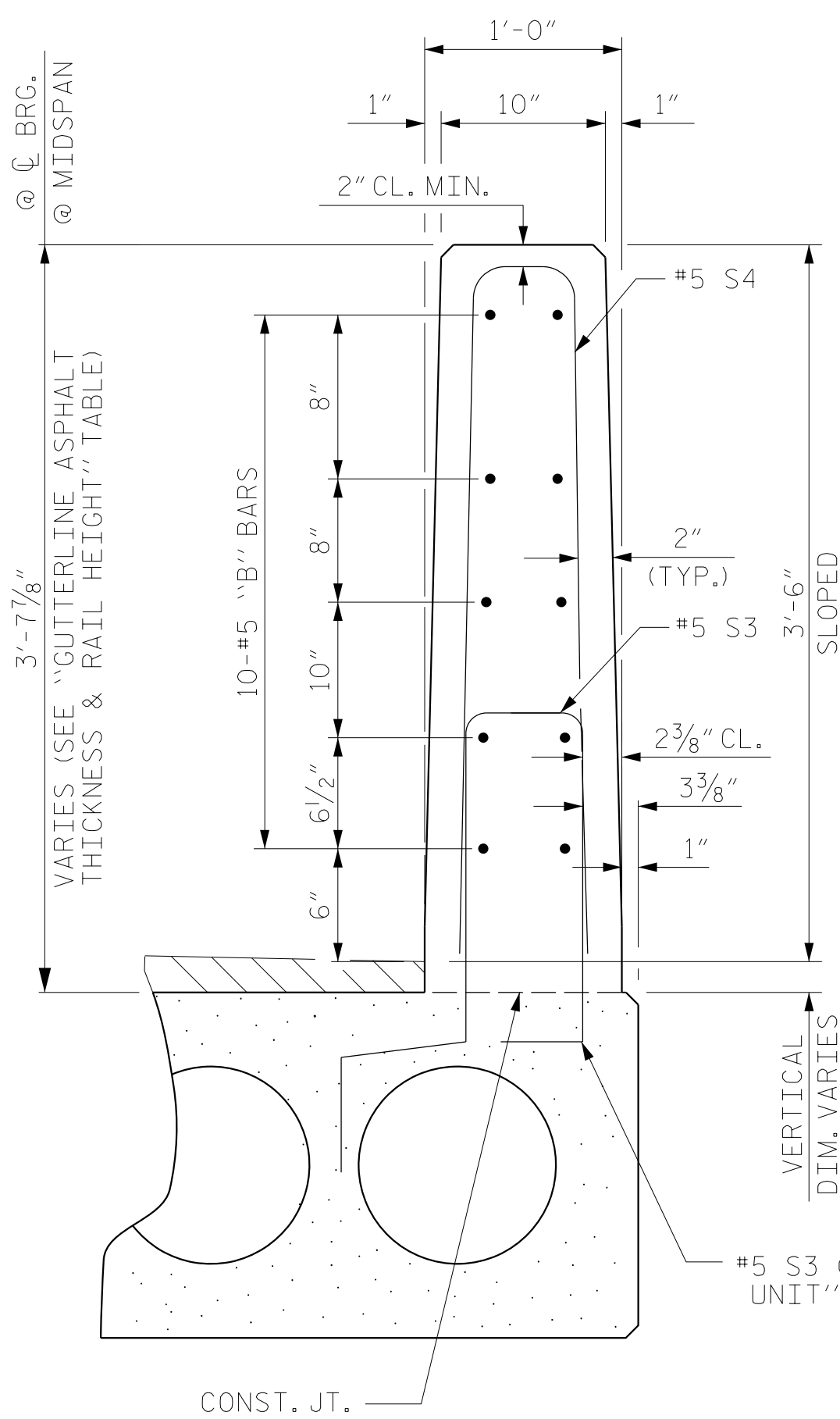
THE COST OF THE PERMITTED THREADED INSERTS SHALL BE INCLUDED IN THE PRICE BID FOR THE PRECAST UNITS.

BILL OF MATERIAL FOR VERTICAL CONCRETE BARRIER RAIL						
BAR	BARS PER PAIR OF EXTERIOR UNITS	TOTAL NO.	SIZE	TYPE	LENGTH	WEIGHT
30' UNIT						
* B9	20	20	#5	STR	29'-7"	617
* S4	70	70	#5	2	7'-2"	523
* S5	8	8	#5	2	5'-8"	47
* EPOXY COATED REINFORCING STEEL					LBS.	1187
CLASS AA CONCRETE					CU. YDS.	7.7
TOTAL VERTICAL CONCRETE BARRIER RAIL					LN. FT.	60.00

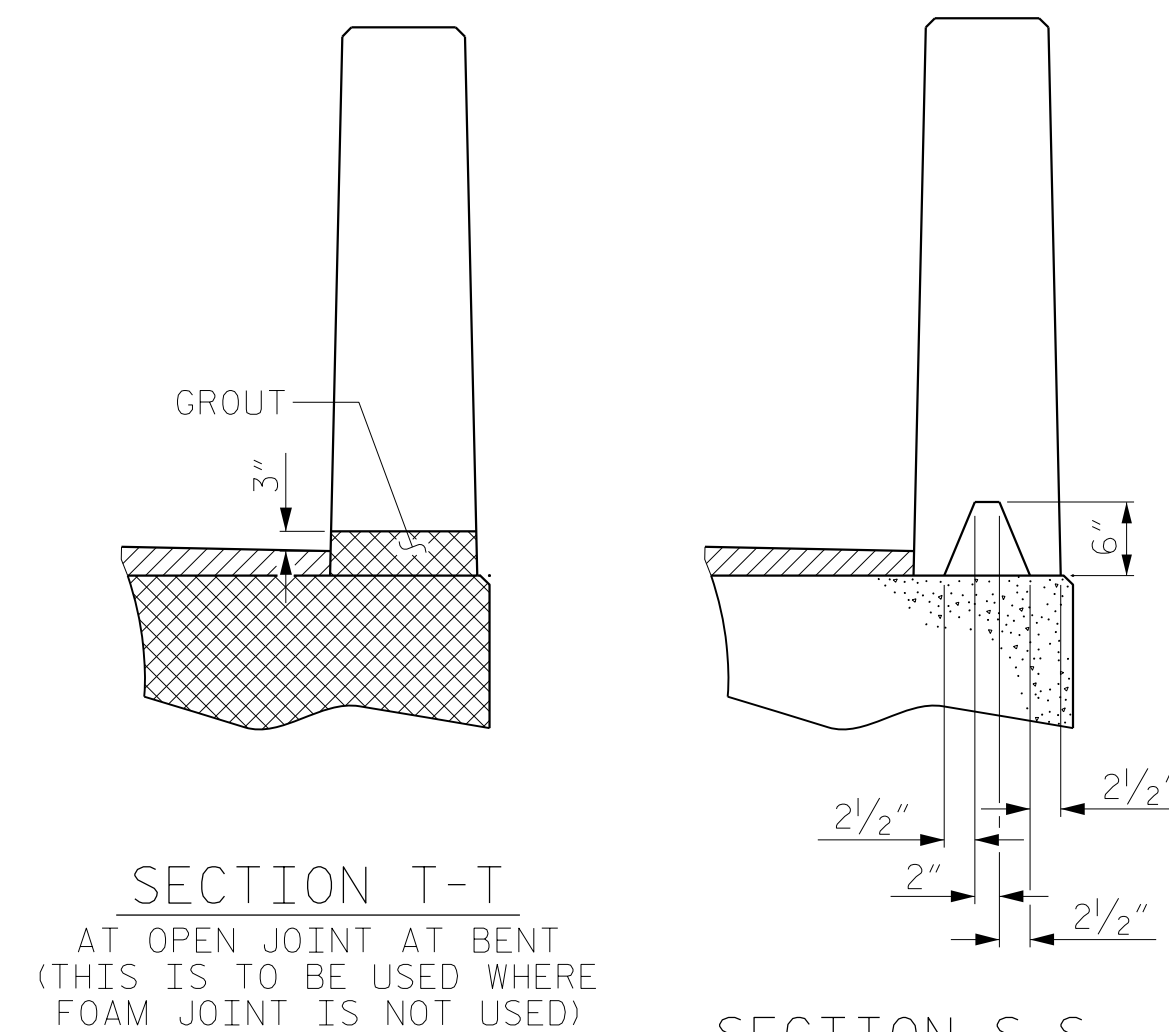
CONCRETE RELEASE STRENGTH	
UNIT	PSI
30' UNIT	4000

PROJECT NO. 17BP.3.R.55
 ONSLOW COUNTY
 STATION: 16+65.00 -L-

SHEET 5 OF 5

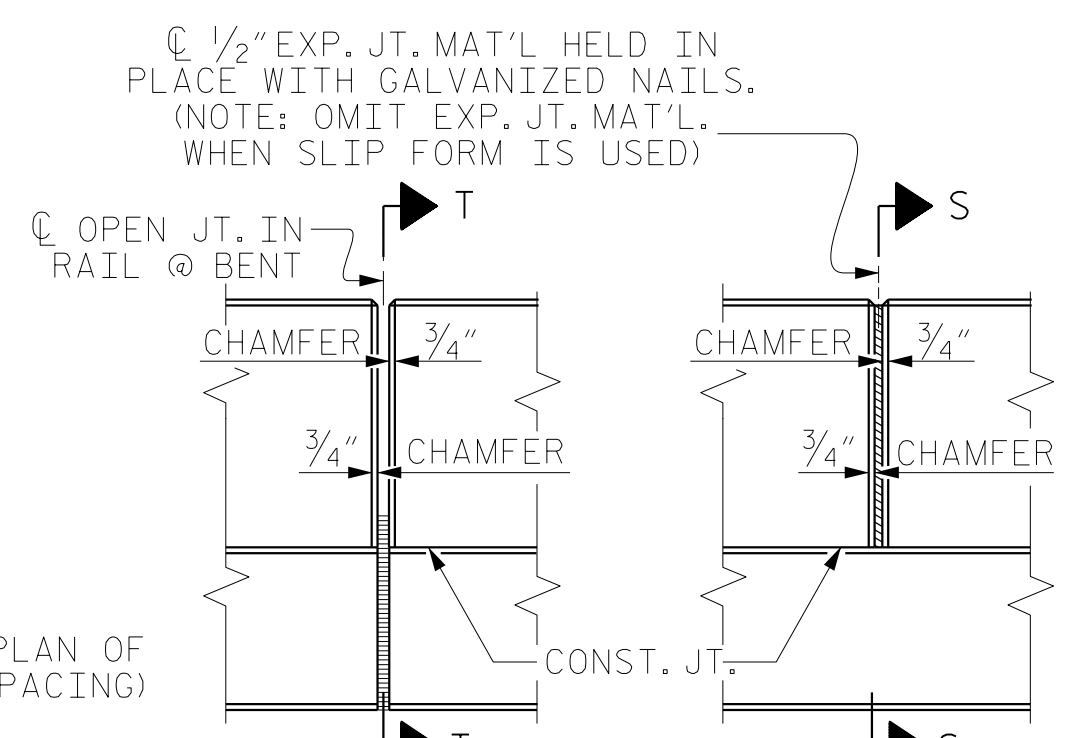


VERTICAL CONCRETE BARRIER RAIL SECTION

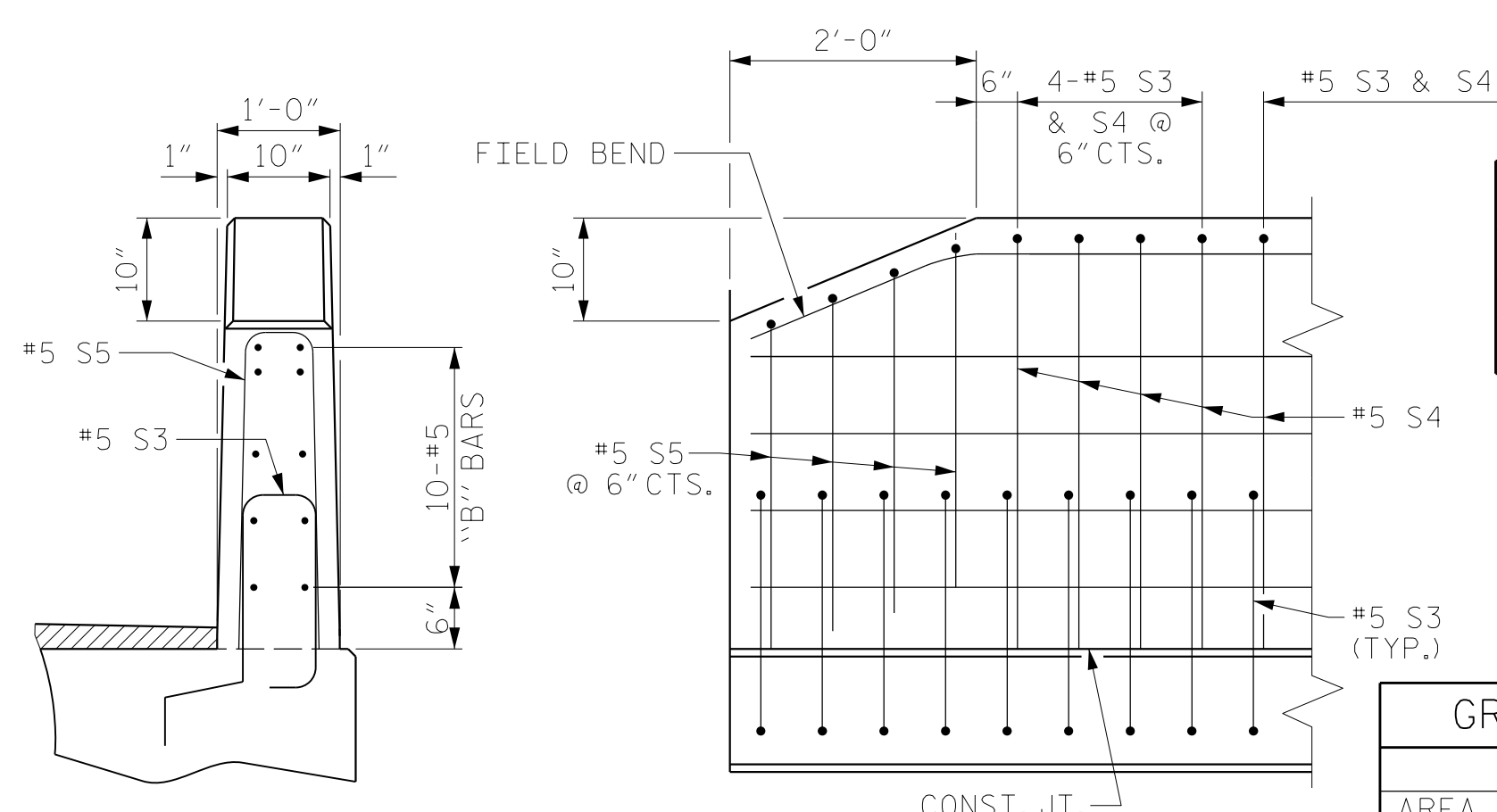


SECTION T-T
AT OPEN JOINT AT BENT
(THIS IS TO BE USED WHERE FOAM JOINT IS NOT USED)

SECTION S-S
AT DAM IN OPEN JOINT
(THIS IS TO BE USED ONLY WHEN SLIP FORM IS USED)



ELEVATION AT EXPANSION JOINTS



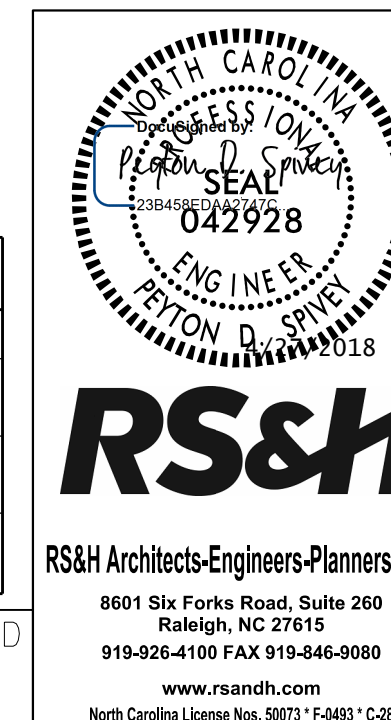
END VIEW

SIDE VIEW

END OF RAIL DETAILS

GRADE 270 STRANDS	
	0.6" Ø L.R.
AREA (SQUARE INCHES)	0.217
ULTIMATE STRENGTH (LBS. PER STRAND)	58,600
APPLIED PRESTRESS (LBS. PER STRAND)	43,950

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
STANDARD 3'-0" X 1'-9" PRESTRESSED CONCRETE CORED SLAB UNIT 90° SKEW SPAN B					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

ASSEMBLED BY :	PDS	DATE :	07/2017
CHECKED BY :	TLC	DATE :	09/2017
DRAWN BY :	DGE 5/09	REV. 11/14	MAA/TMG
CHECKED BY :	BCH 6/09		

NOTES

THE GUARDRAIL ANCHOR ASSEMBLY SHALL CONSIST OF A 1/4" HOLD DOWN PLATE AND 7 - 7/8" Ø BOLTS WITH NUTS AND WASHERS.

THE HOLD-DOWN PLATE SHALL CONFORM TO AASHTO M270 GRADE 36. AFTER FABRICATION, THE HOLD-DOWN PLATE SHALL BE HOT-DIP GALVANIZED IN ACCORDANCE WITH AASHTO M111.

BOLTS SHALL CONFORM TO THE REQUIREMENTS OF ASTM A307 AND NUTS SHALL CONFORM TO THE REQUIREMENTS OF AASHTO M291. BOLTS, NUTS AND WASHERS SHALL BE GALVANIZED. (AT THE CONTRACTOR'S OPTION, STAINLESS STEEL BOLTS, NUTS AND WASHERS MAY BE USED AS AN ALTERNATE FOR THE 7/8" Ø GALVANIZED BOLTS, NUTS AND WASHERS. THEY SHALL CONFORM TO OR EXCEED THE MECHANICAL REQUIREMENTS OF ASTM A307. THE USE OF THIS ALTERNATE SHALL BE APPROVED BY THE ENGINEER.)

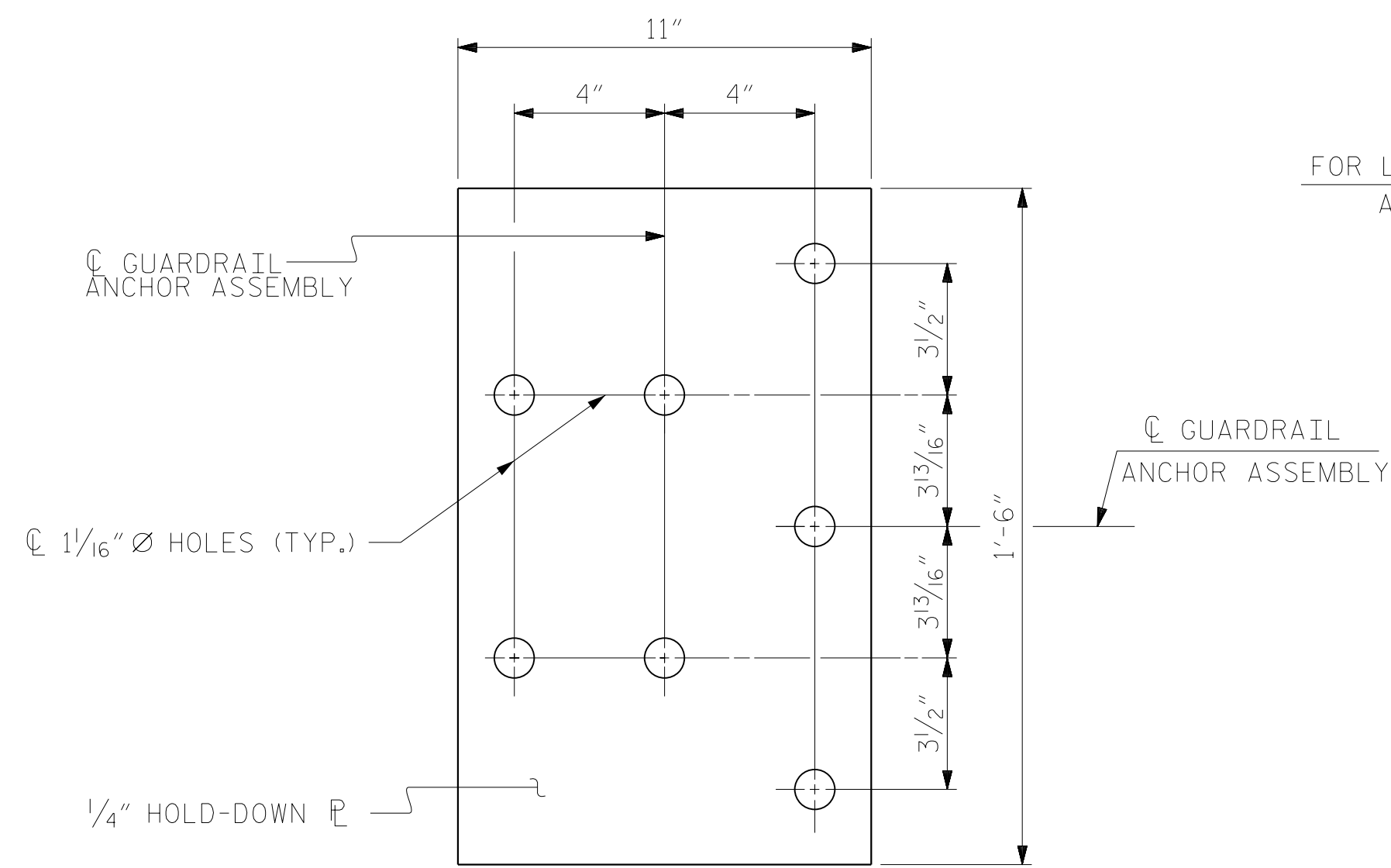
THE GUARDRAIL ANCHOR ASSEMBLY IS REQUIRED AT ALL POINTS WHERE APPROACH GUARDRAIL IS TO BE ATTACHED TO THE END OF BARRIER RAIL. FOR POINTS OF ATTACHMENT, SEE SKETCH.

AFTER INSTALLATION, THE EXPOSED THREAD OF THE BOLT SHALL BE BURRED WITH A SHARP POINTED TOOL.

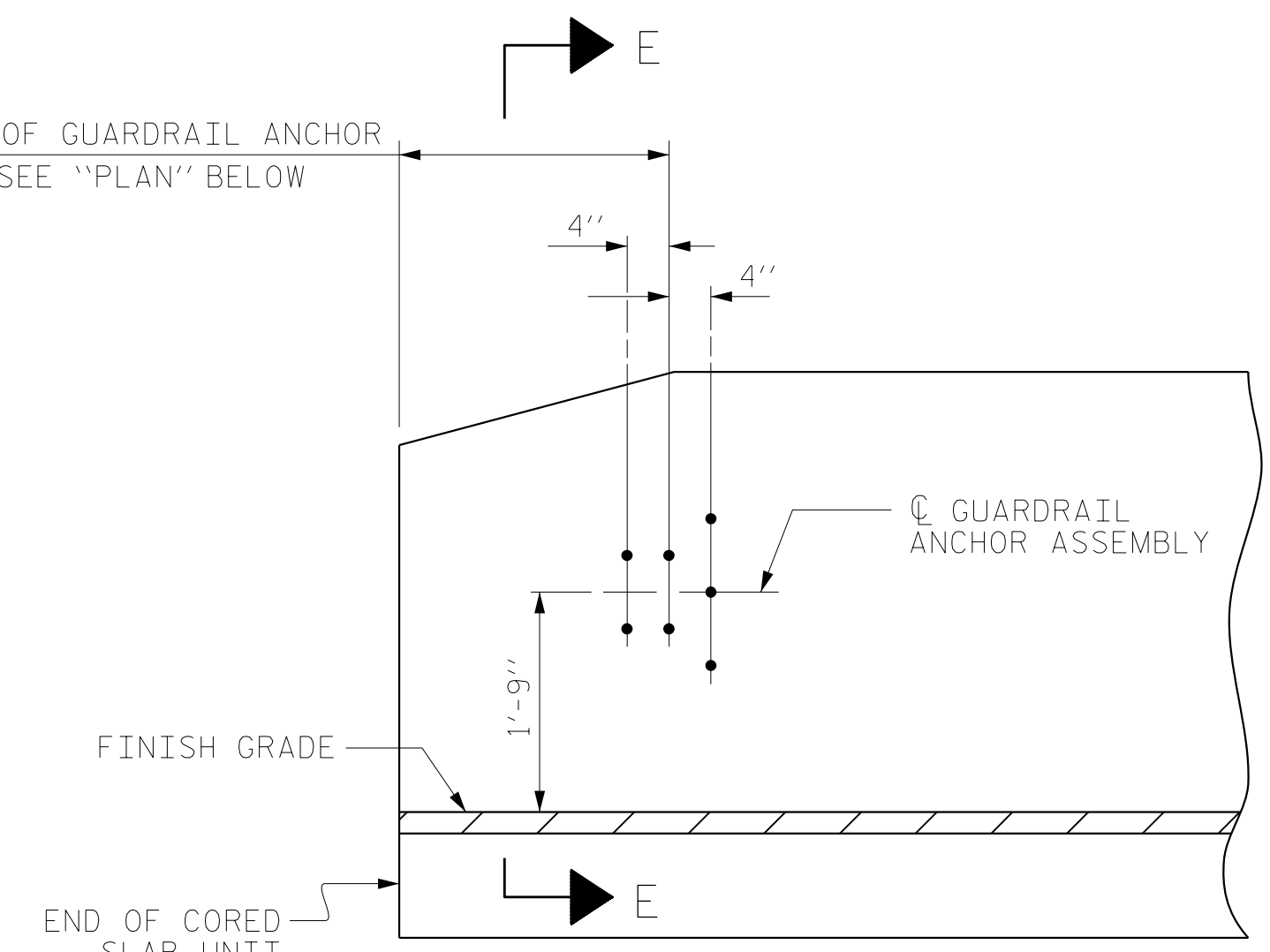
THE COST OF THE GUARDRAIL ANCHOR ASSEMBLY SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR VERTICAL CONCRETE BARRIER RAIL.

THE VERTICAL REINFORCING BARS MAY BE SHIFTED SLIGHTLY IN THE VERTICAL CONCRETE BARRIER RAIL TO CLEAR ASSEMBLY BOLTS.

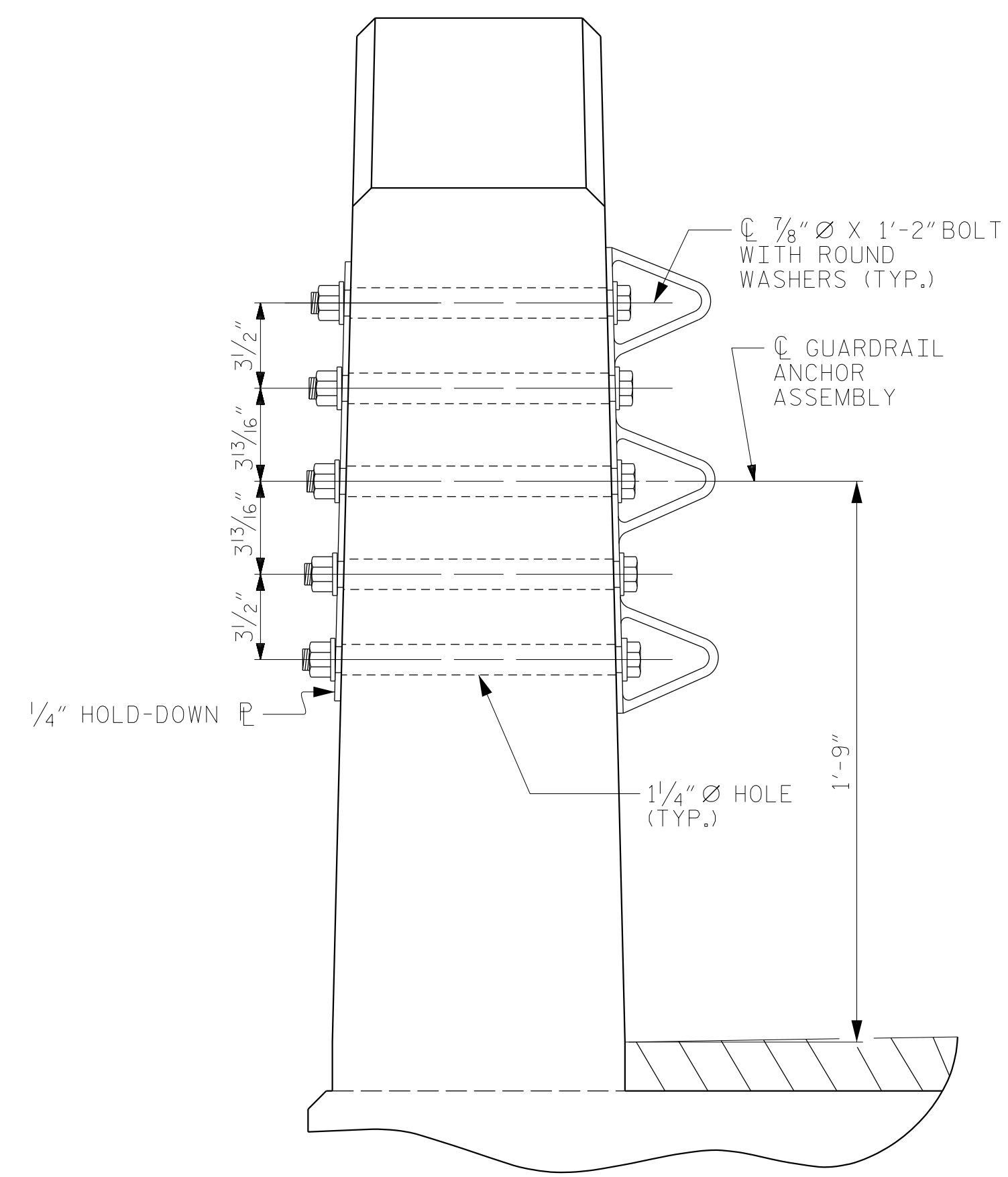
THE 1 1/4" Ø HOLES SHALL BE FORMED OR DRILLED WITH A CORE BIT. IMPACT TOOLS WILL NOT BE PERMITTED. ANY CONCRETE DAMAGED BY THIS WORK SHALL BE REPAIRED TO THE SATISFACTION OF THE ENGINEER.



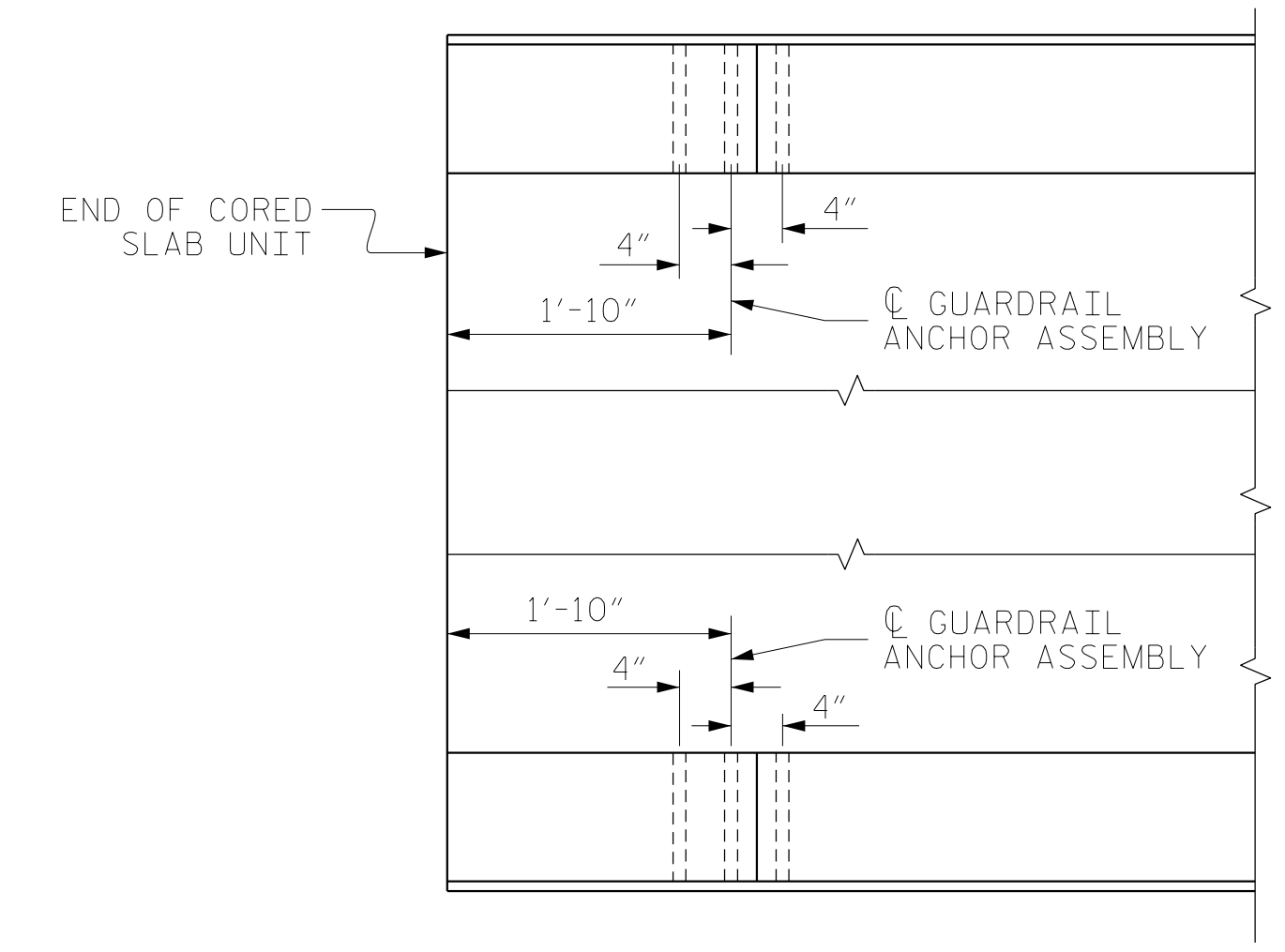
PLAN



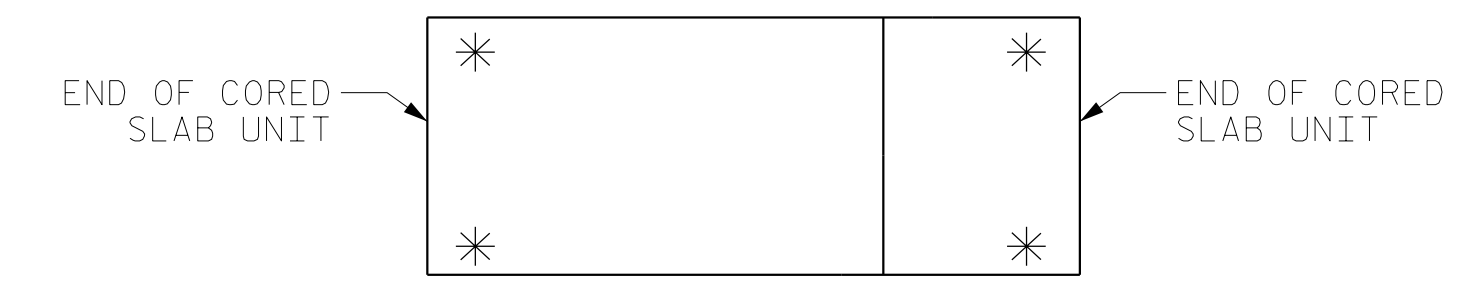
ELEVATION



SECTION E-E
GUARDRAIL ANCHOR ASSEMBLY DETAILS



PLAN
LOCATION OF ANCHORS FOR GUARDRAIL
END BENT NO. 1 SHOWN, END BENT NO. 2 SIMILAR.



SKETCH SHOWING POINTS OF ATTACHMENT

* DENOTES GUARDRAIL ANCHOR ASSEMBLY

PROJECT NO. 17BP.3.R.55
ONslow COUNTY
STATION: 16+65.00 -L-

ASSEMBLED BY :	PDS	DATE :	07/2017
CHECKED BY :	TLC	DATE :	09/2017
DRAWN BY :	MAA 5/10	REV. 12/5/11	MAA/GM
CHECKED BY :	GM 5/10	REV. 6/13	MAA/GM
		REV. 1/15	MAA/TMG

4/3/2018
X:\P1030036005 Div 3 Onslow 13\Design\Structures\Working DGN\013.021.17BP.3.R.55.SMU.GR11.5-11.dgn
spiveyp

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
STANDARD GUARDRAIL ANCHORAGE DETAILS FOR VERTICAL CONCRETE BARRIER RAIL					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
SHEET NO.					S-11
TOTAL SHEETS					20

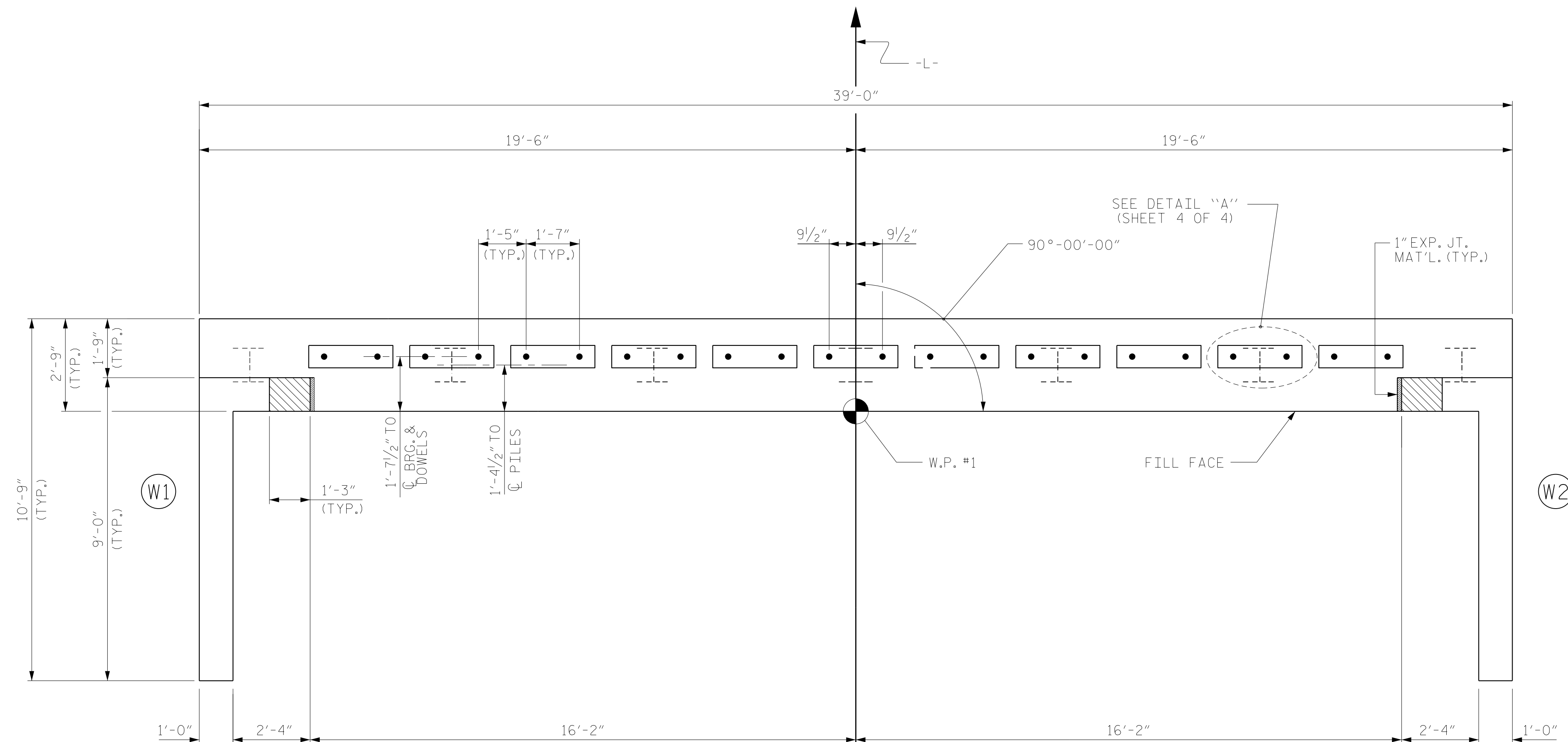
NOTES

STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR DOWELS.

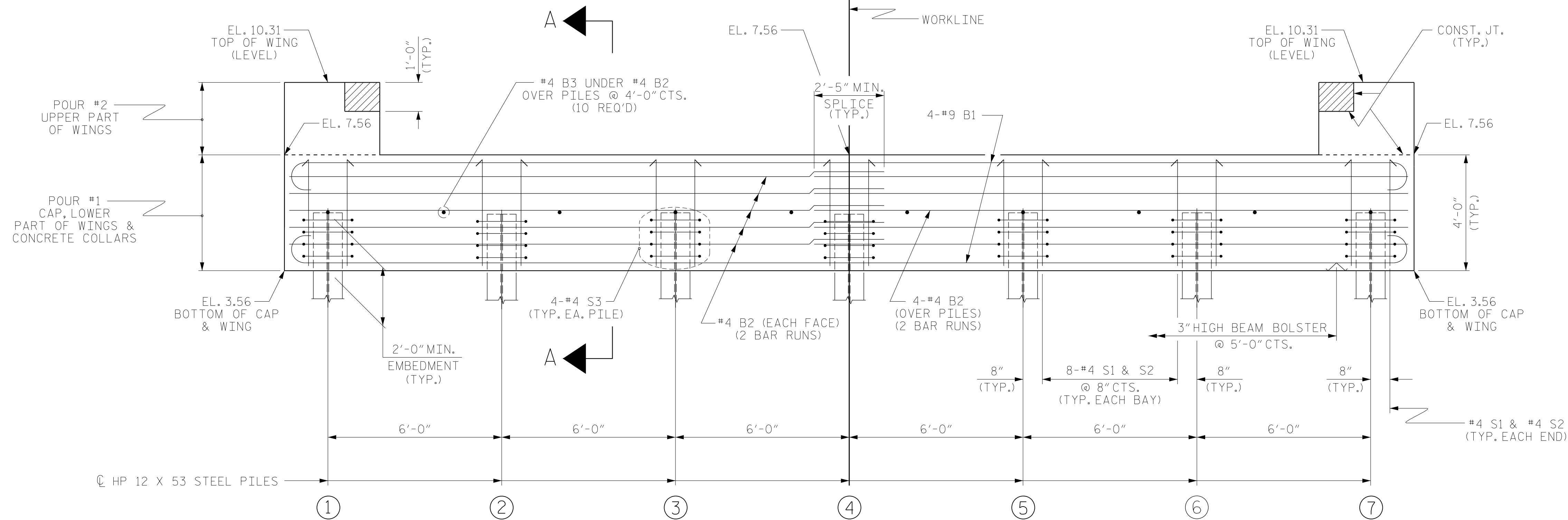
THE CONCRETE IN THE SHADED AREA OF THE WING SHALL BE POURED AFTER THE VERTICAL CONCRETE BARRIER RAIL IS CAST IF SLIP FORMING IS USED.

FOR PILE SPLICE DETAILS, SEE SHEET 4 OF 4.

FOR WING DETAILS, SEE SHEET 3 OF 4.



PLAN



ELEVATION

WINGS NOT SHOWN FOR CLARITY.
FOR SECTION A-A, SEE SHEET 4 OF 4.
CONCRETE COLLARS FOR STEEL PILES NOT SHOWN IN PLAN AND ELEVATION VIEWS FOR CLARITY.
SEE "CORROSION PROTECTION FOR STEEL PILES DETAIL", SHEET 4 OF 4.

PROJECT NO. 17BP.3.R.55
ONslow COUNTY
STATION: 16+65.00 -L-

SHEET 1 OF 4



RS&H Architects-Engineers-Planners, Inc.
8601 Six Forks Road, Suite 200
Raleigh, NC 27615
919-926-4100 FAX 919-846-9080
www.rsandh.com
North Carolina License No. 50737-F-0403-1-C-28

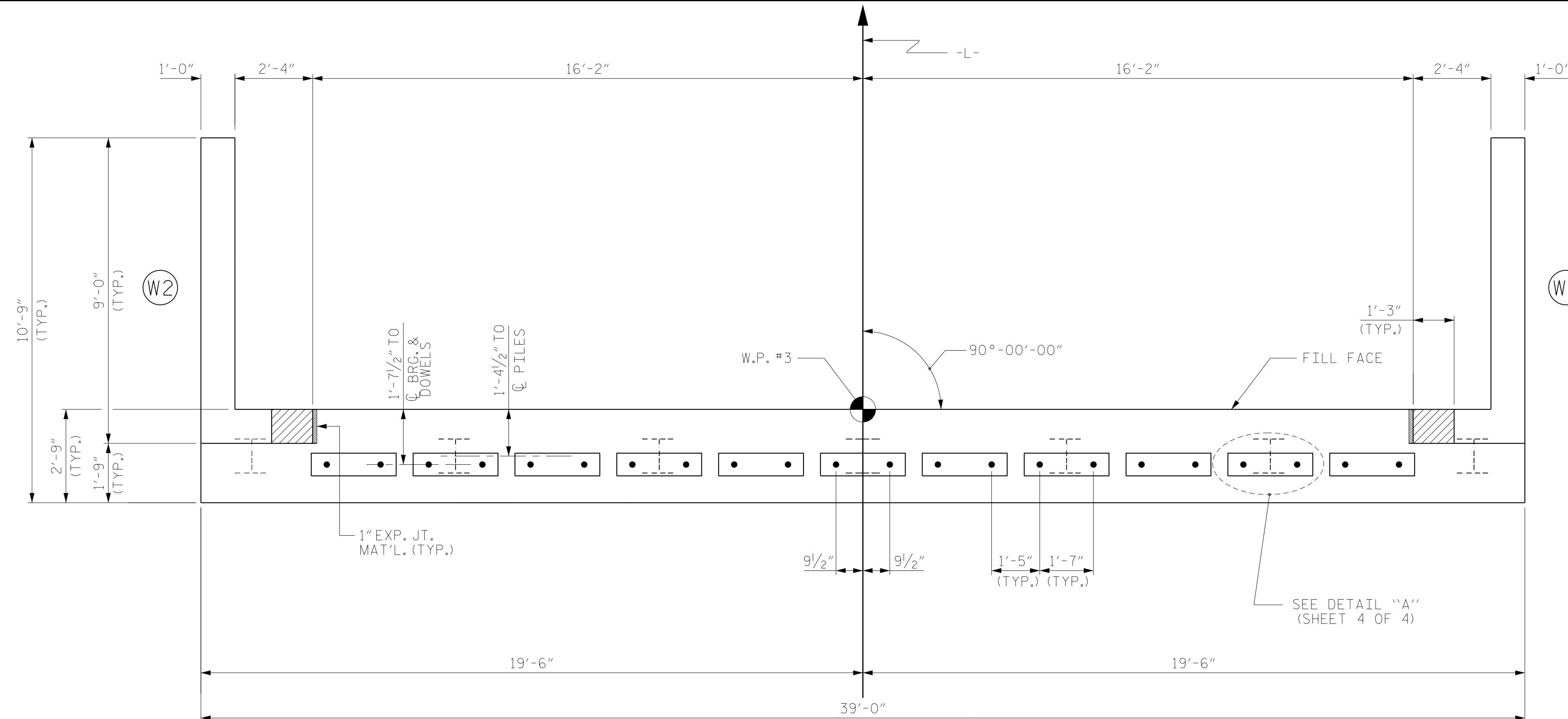
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH						SHEET NO. S-12
SUBSTRUCTURE END BENT NO. 1						TOTAL SHEETS 20
REVISIONS						NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			
2			4			

ASSEMBLED BY : PDS	DATE : 07/2017
CHECKED BY : TLC	DATE : 09/2017
DRAWN BY : WJH 12/11	REV. 4/15
CHECKED BY : AAC 12/11	MAA/TMG

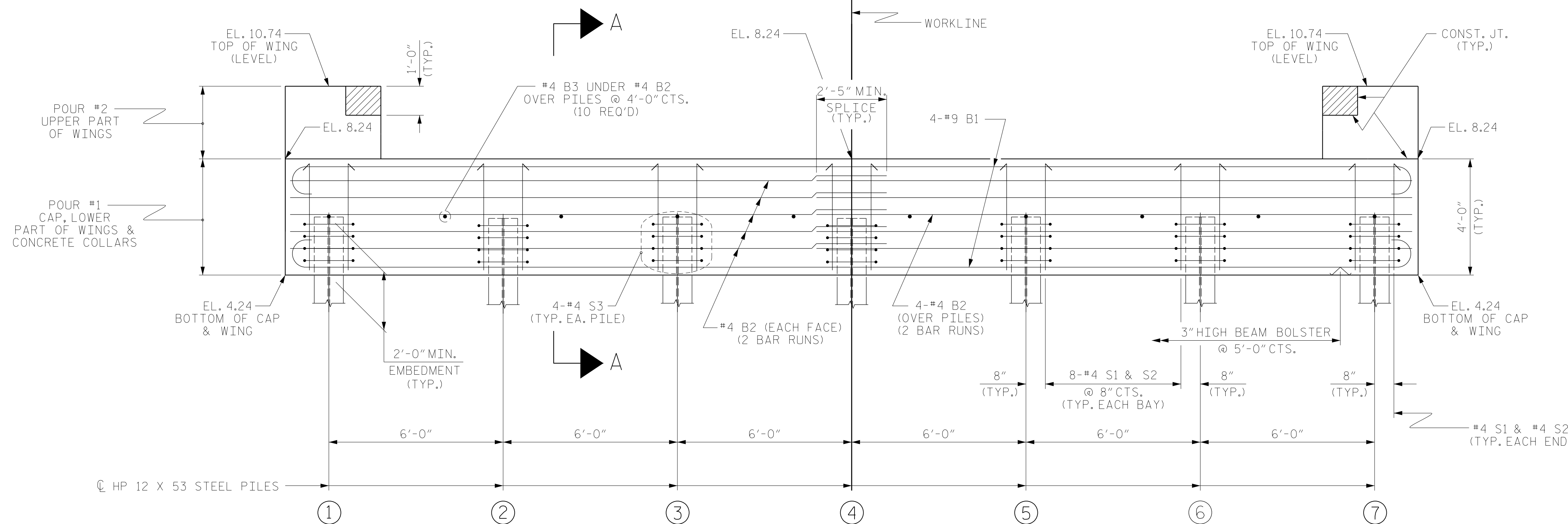
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NOTES

STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR DOWELS.
 THE CONCRETE IN THE SHADED AREA OF THE WING SHALL BE POURED AFTER THE VERTICAL CONCRETE BARRIER RAIL IS CAST IF SLIP FORMING IS USED.
 FOR PILE SPLICE DETAILS, SEE SHEET 4 OF 4.
 FOR WING DETAILS, SEE SHEET 3 OF 4.



PLAN

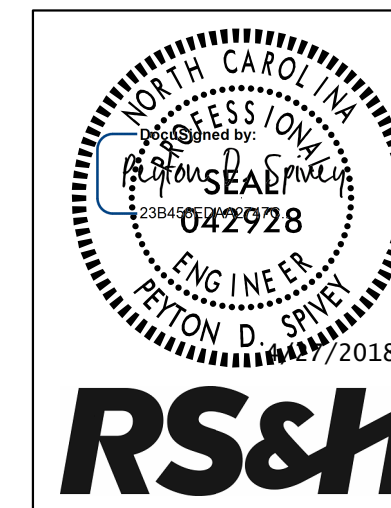


ELEVATION

WINGS NOT SHOWN FOR CLARITY.
 FOR SECTION A-A, SEE SHEET 4 OF 4.
 CONCRETE COLLARS FOR STEEL PILES NOT SHOWN IN PLAN AND ELEVATION VIEWS FOR CLARITY.
 SEE "CORROSION PROTECTION FOR STEEL PILES DETAIL", SHEET 4 OF 4.

PROJECT NO. 17BP.3.R.55
ONslow COUNTY
 STATION: 16+65.00 -L-

SHEET 2 OF 4

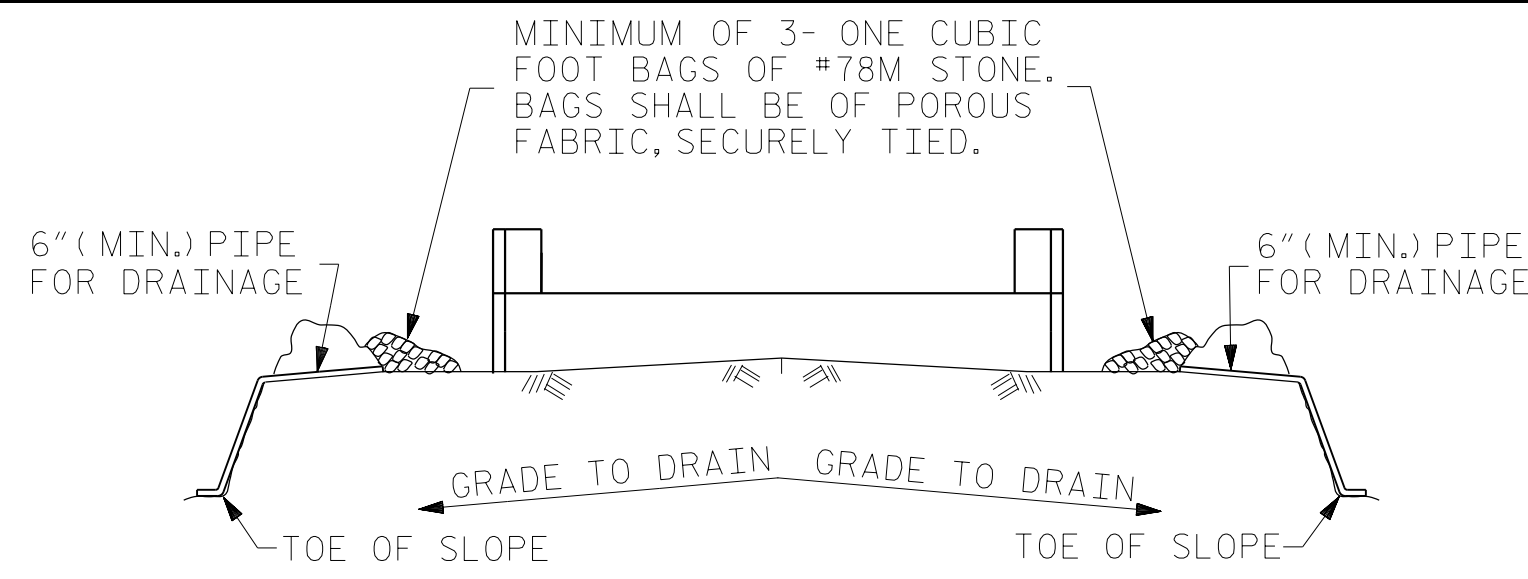


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STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUBSTRUCTURE END BENT NO. 2					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
SHEET NO.					S-13
TOTAL SHEETS					20

ASSEMBLED BY :	PDS	DATE :	07/2017
CHECKED BY :	TLC	DATE :	09/2017
DRAWN BY :	WJH 12/11	REV.	4/15
CHECKED BY :	AAC 12/11		MAA/TMG

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

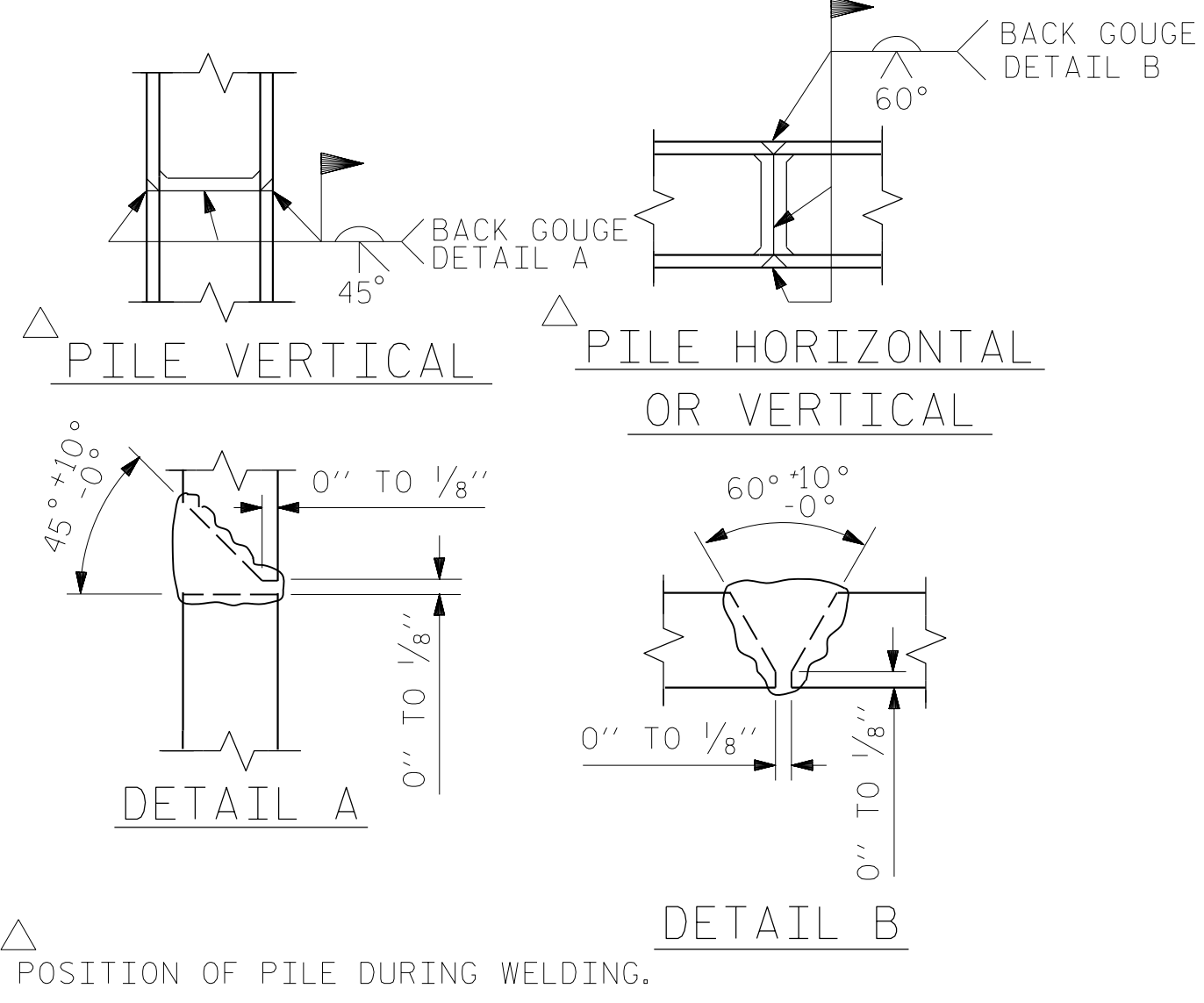


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

BAGGED STONE SHALL REMAIN IN PLACE UNTIL THE ENGINEER DIRECTS THAT IT BE REMOVED. THE CONTRACTOR SHALL REMOVE AND DISPOSE OF SILT ACCUMULATIONS AT BAGGED STONE WHEN SO DIRECTED BY THE ENGINEER. BAGS SHALL BE REMOVED AND REPLACED WHENEVER THE ENGINEER DETERMINES THAT THEY HAVE DETERIORATED AND LOST THEIR EFFECTIVENESS.

NO SEPARATE PAYMENT WILL BE MADE FOR THIS WORK AND THE ENTIRE COST OF THIS WORK SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR THE SEVERAL PAY ITEMS.

TEMPORARY DRAINAGE AT END BENT



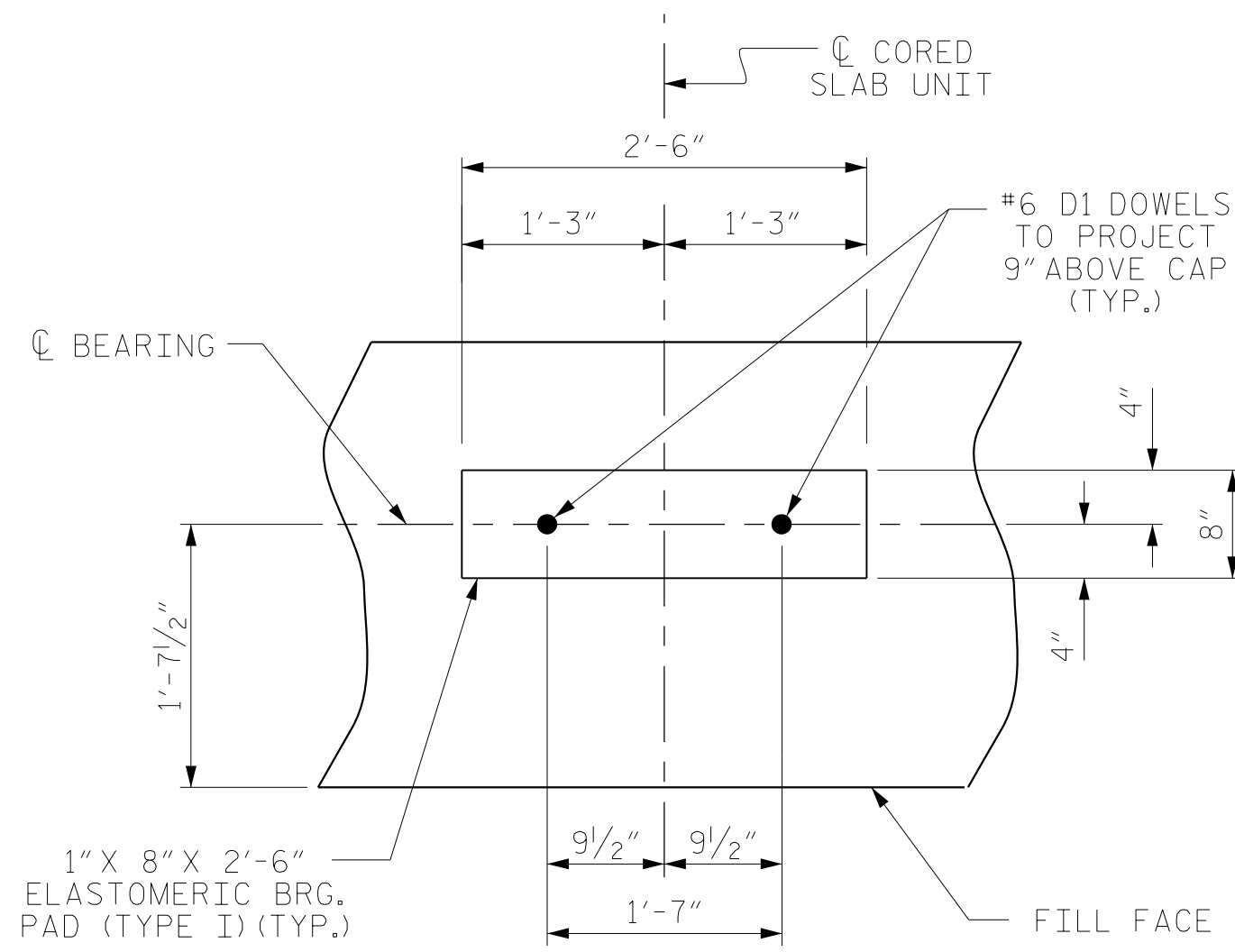
PILE SPLICE DETAILS

BILL OF MATERIAL FOR ONE END BENT					
BAR NO.	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	8	#9	1	41'-0"	1115
B2	28	#4	STR	20'-7"	385
B3	10	#4	STR	2'-5"	16
D1	22	#6	STR	1'-6"	50
H1	40	#4	2	9'-4"	249
K1	16	#4	STR	2'-11"	31
S1	50	#4	3	10'-5"	348
S2	50	#4	4	3'-2"	106
S3	28	#4	5	6'-6"	122
V1	52	#4	STR	6'-2"	214
REINFORCING STEEL (FOR ONE END BENT)					2636 LBS.
CLASS A CONCRETE BREAKDOWN (FOR ONE END BENT)					
POUR #1	CAP, LOWER PART OF WINGS & COLLARS				19.5 C.Y.
POUR #2	UPPER PART OF WINGS (EB NO. 1) (EB NO. 2)				2.3 C.Y. 2.1 C.Y.
TOTAL CLASS A CONCRETE (EB NO. 1) (EB NO. 2)					21.8 C.Y. 21.6 C.Y.

BAR TYPES	

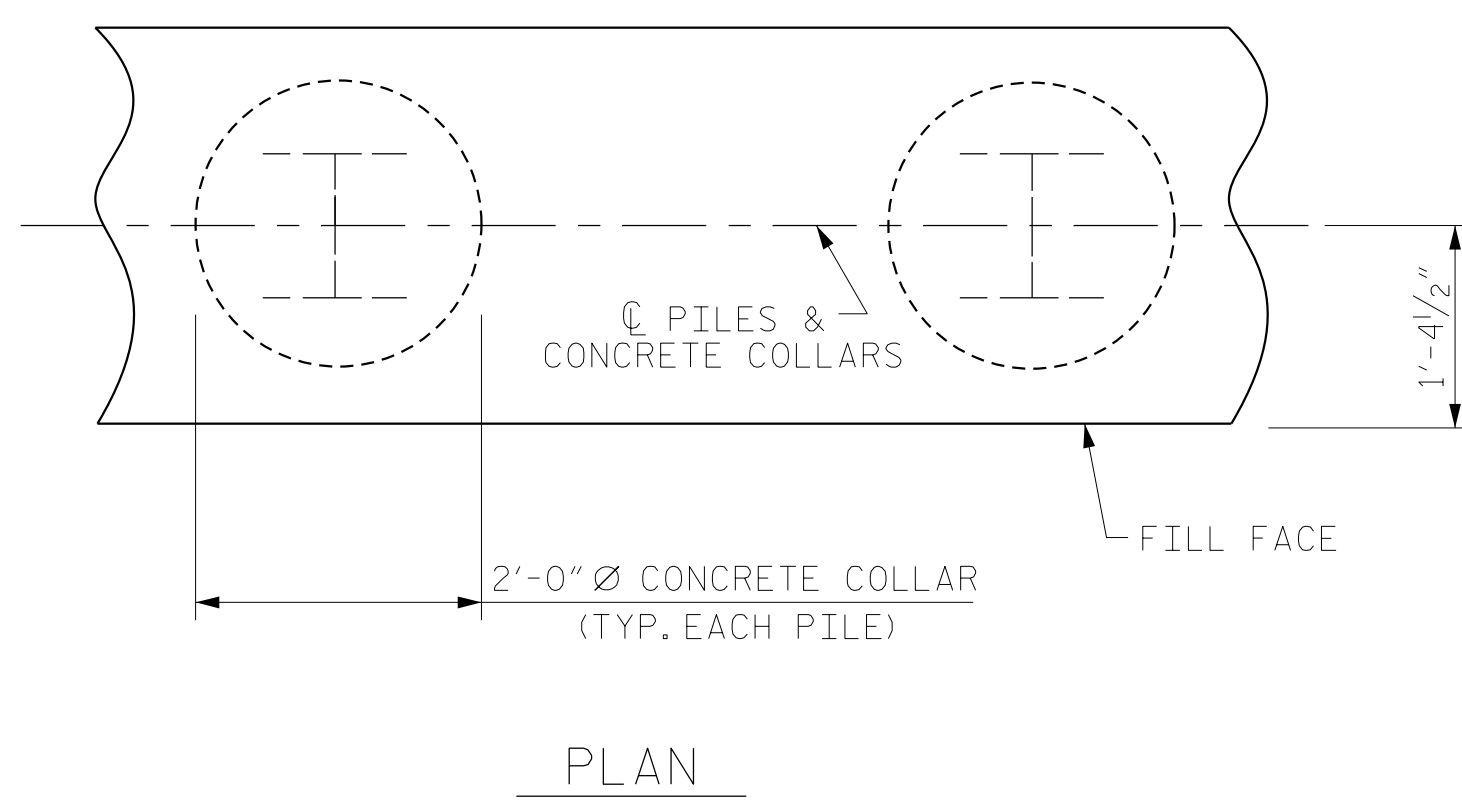
ALL BAR DIMENSIONS ARE OUT TO OUT.

END BENT NO. 1 PILE DRIVING EQUIPMENT SETUP	END BENT NO. 2 PILE DRIVING EQUIPMENT SETUP
NO: 7 EA.	NO: 7 EA.
HP 12 X 53 STEEL PILES NO: 7 LIN. FT.= 245	HP 12 X 53 STEEL PILES NO: 7 LIN. FT.= 245
STEEL PILE POINTS NO: 7 EA.	STEEL PILE POINTS NO: 7 EA.



DETAIL "A"

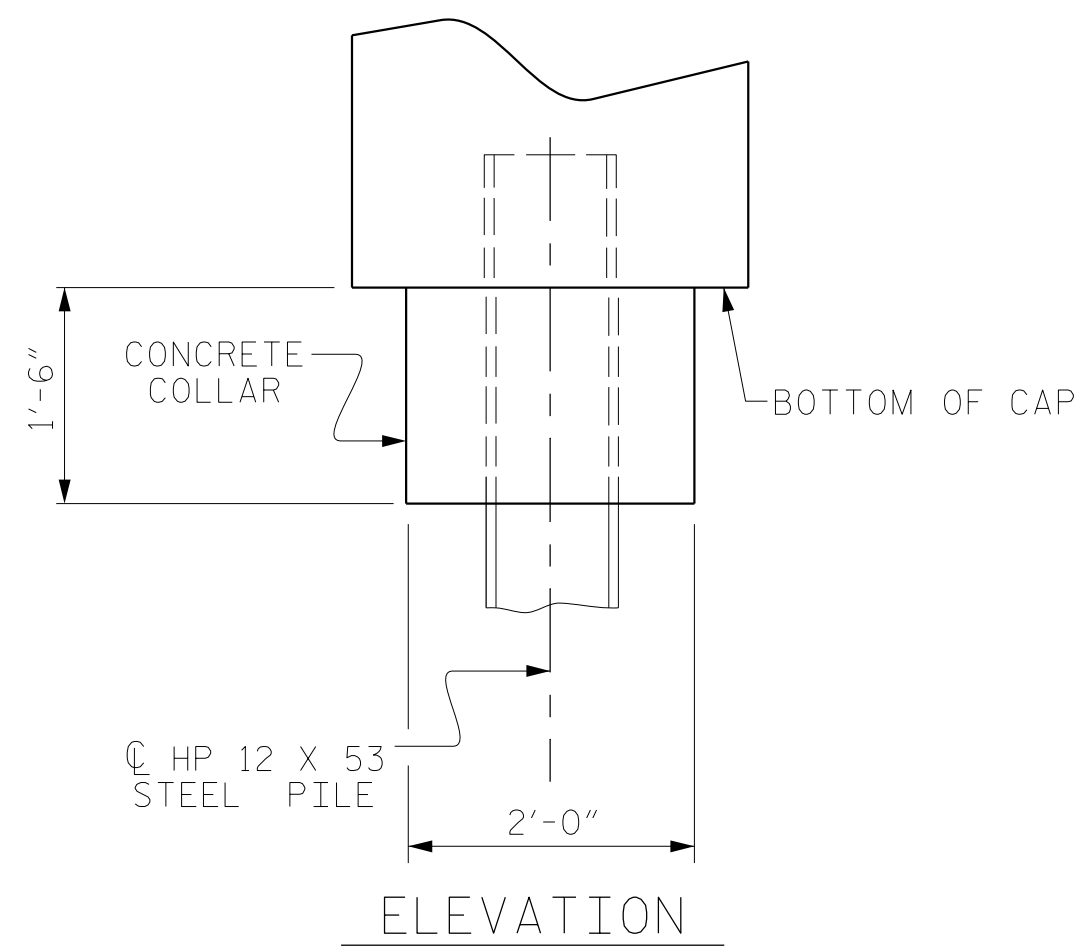
(END BENT NO. 1 SHOWN, END BENT NO. 2 SIMILAR BY ROTATION)



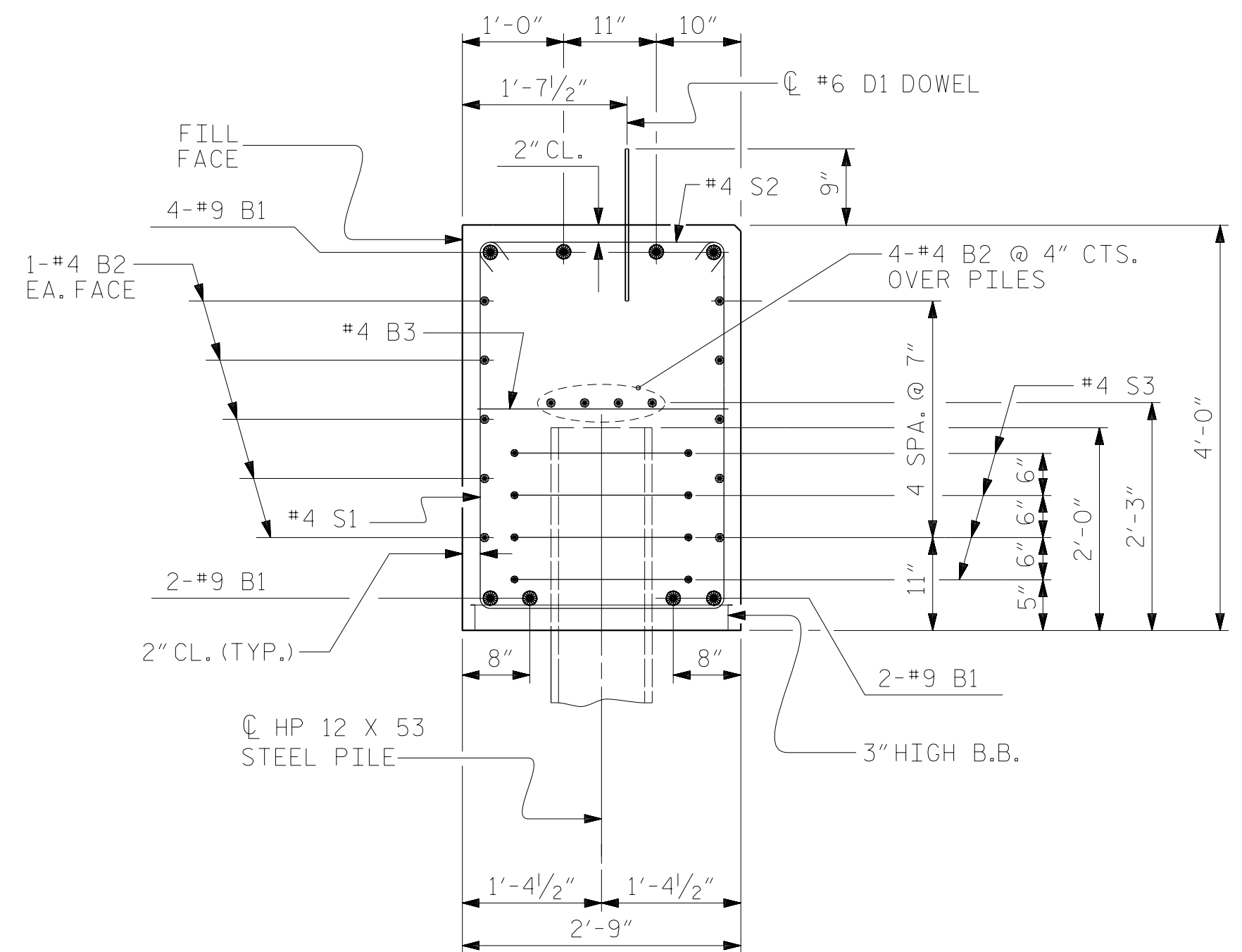
PLAN

CORROSION PROTECTION FOR STEEL PILES DETAIL

(END BENT NO. 1 SHOWN, END BENT NO. 2 SIMILAR BY ROTATION)



ELEVATION



SECTION A-A

(CONCRETE COLLAR NOT SHOWN FOR CLARITY. SEE "CORROSION PROTECTION FOR STEEL PILES DETAIL.")

PROJECT NO. 17BP.3.R.55
 ONSLOW COUNTY
 STATION: 16+65.00 -L-
 SHEET 4 OF 4



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE
 END BENT NO. 1 & 2
 DETAILS

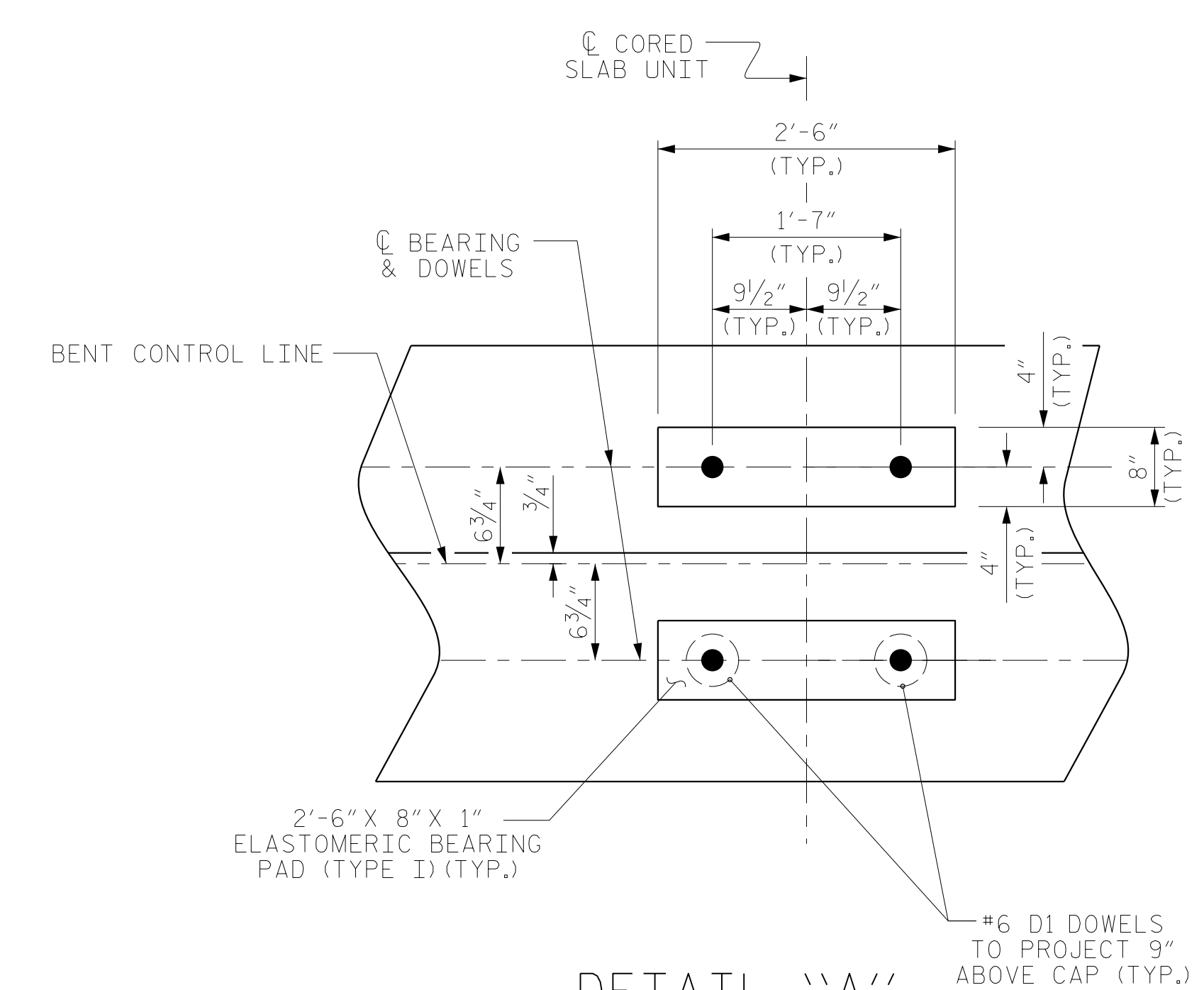
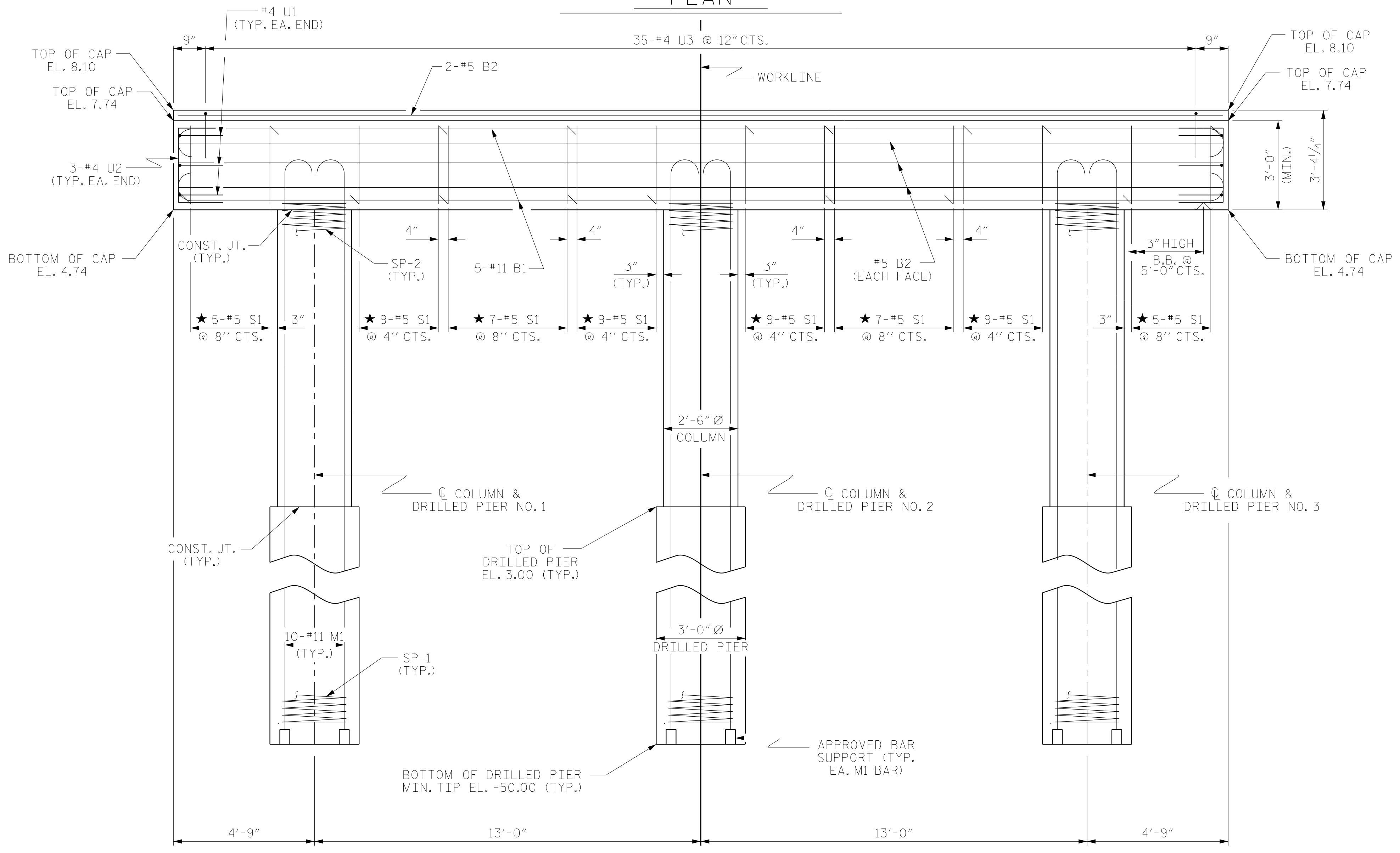
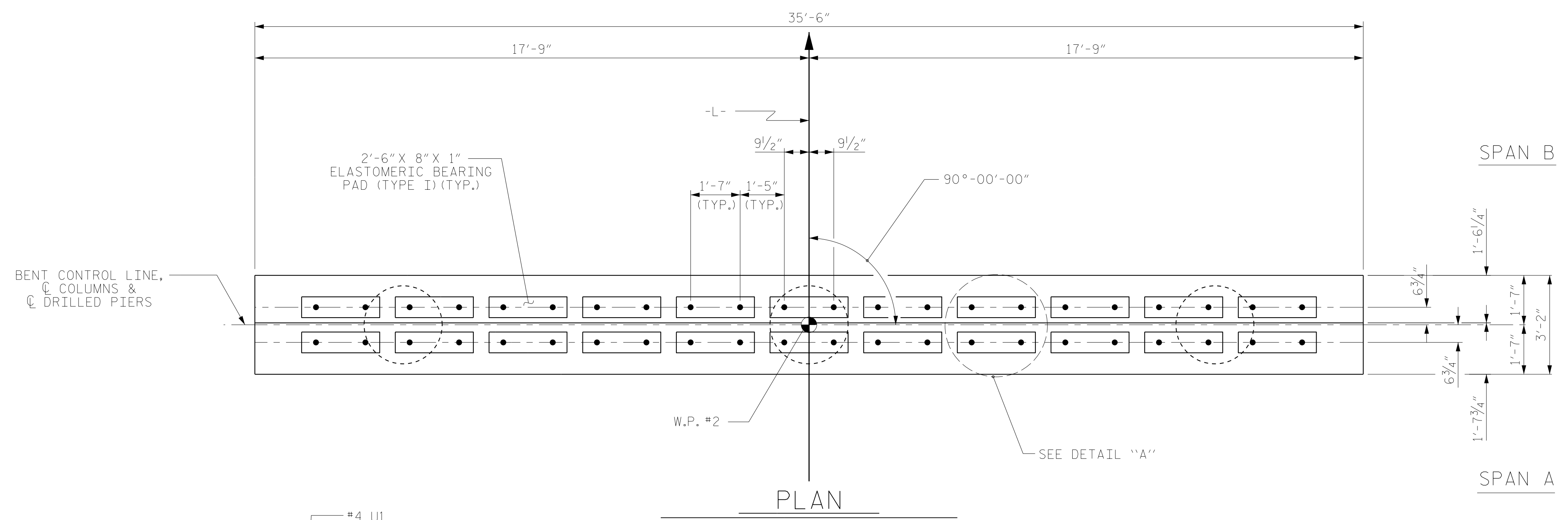
ASSEMBLED BY : PDS	DATE : 07/2017
CHECKED BY : TLC	DATE : 09/2017
DRAWN BY : WJH 12/11	
CHECKED BY : AAC 12/11	

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-15
1			3			TOTAL SHEETS
2			4			20

NOTES

- STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR DOWELS.
- HOOKS ON "V" BARS MAY BE TURNED AS NECESSARY FOR PLACING REINFORCING STEEL.
- FOR DRILLED PIERS, SEE SECTION 411 OF THE STANDARD SPECIFICATIONS.
- ALL STEEL IN THE DRILLED PIERS IS INCLUDED IN THE PAY ITEMS FOR "REINFORCING STEEL" AND "SPIRAL COLUMN REINFORCING STEEL."
- ★ INVERT ALTERNATE STIRRUPS.
- DRILLED PIERS SHALL BE TERMINATED ONE FOOT ± ABOVE NORMAL WATER SURFACE ELEVATION FOR SHAFTS LOCATED IN WATER.
- THE CONTRACTOR'S ATTENTION IS CALLED TO THE FACT THAT THE LONGITUDINAL REINFORCEMENT FOR DRILLED PIERS IS DETAILED WITH 3 FEET OF EXTRA LENGTH.



DETAIL "A"
(DIMENSIONS ARE TYPICAL EACH BEARING)

PROJECT NO. 17BP.3.R.55
 ONSLOW COUNTY
 STATION: 16+65.00 -L-

SHEET 1 OF 2



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

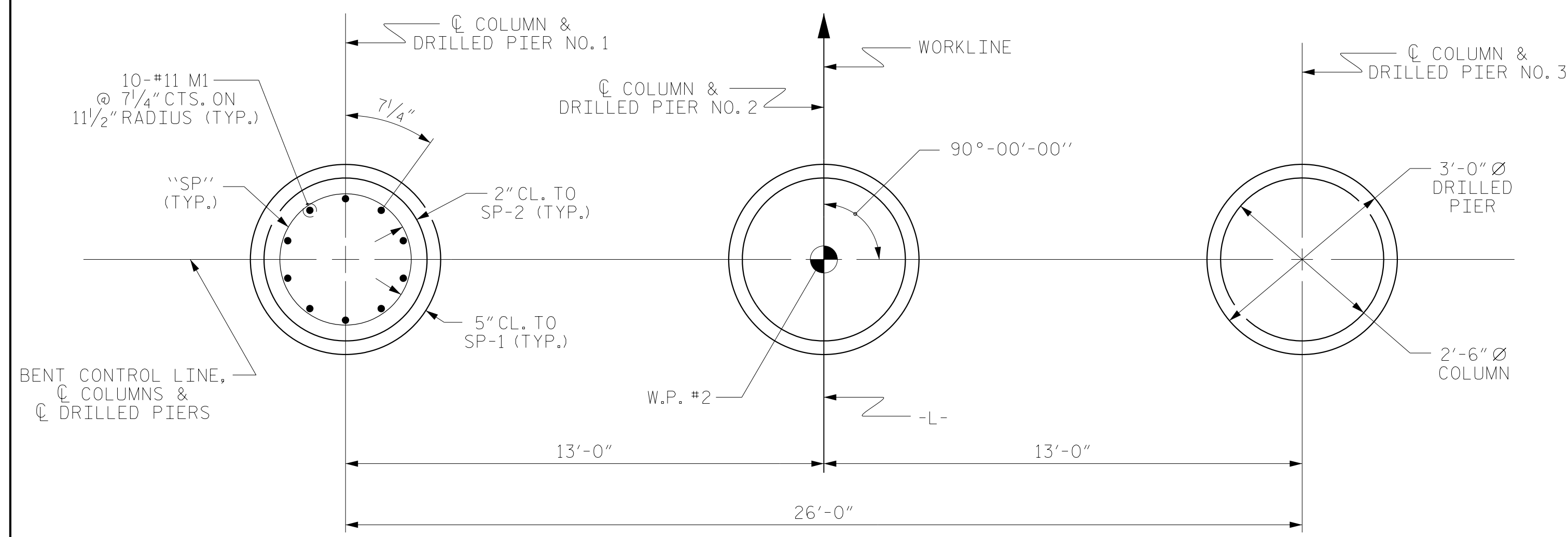
SUBSTRUCTURE
 BENT NO. 1

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-16
1			3			TOTAL SHEETS
2			4			20

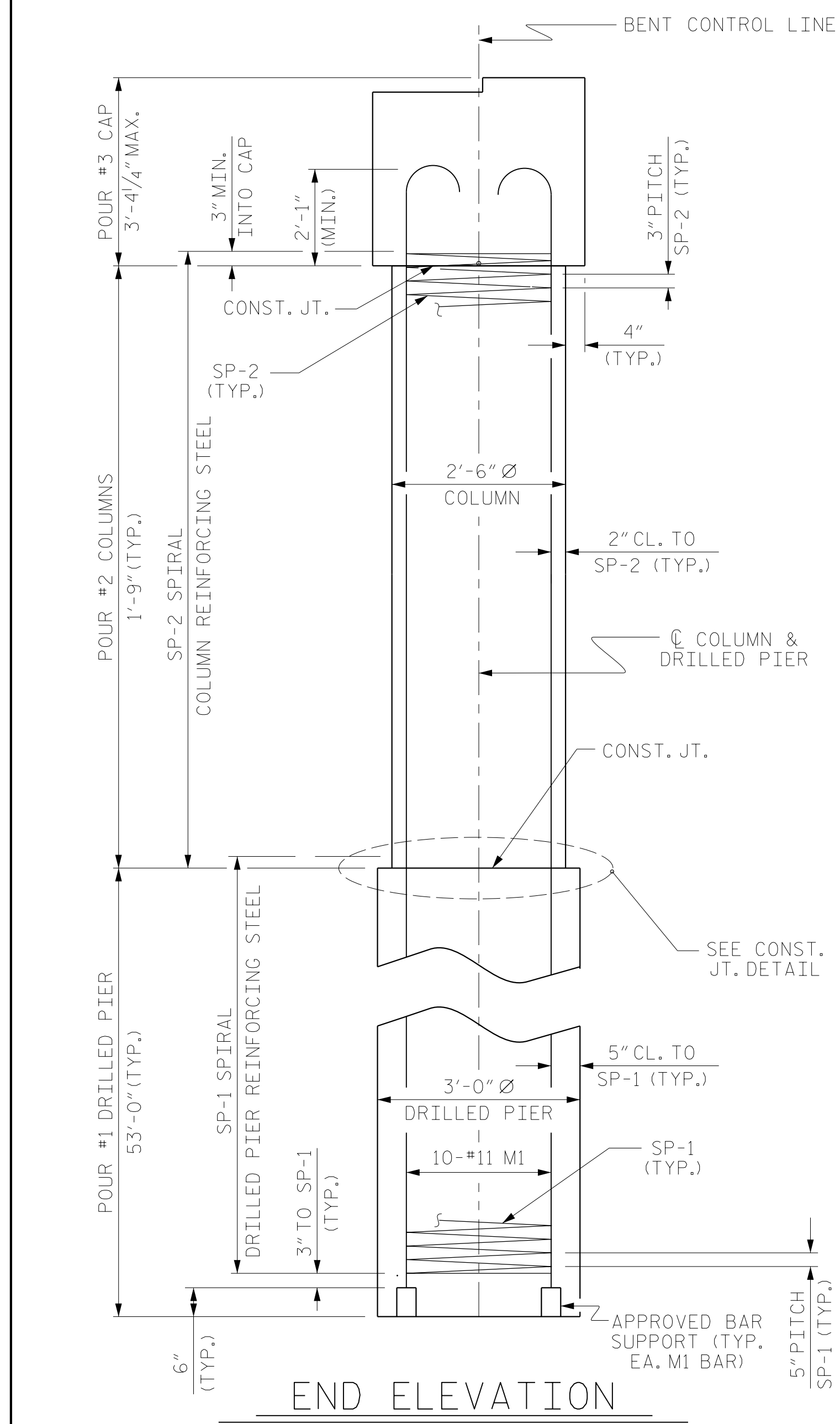
ASSEMBLED BY : PDS	DATE : 09/2017
CHECKED BY : TLC	DATE : 09/2017
DRAWN BY : DGE 4/10	REV. 11/14
CHECKED BY : MKT 4/10	MAA/TMG

DIMENSIONS & REINFORCING STEEL ARE TYPICAL FOR EACH COLUMN & DRILLED PIER UNLESS OTHERWISE NOTED.

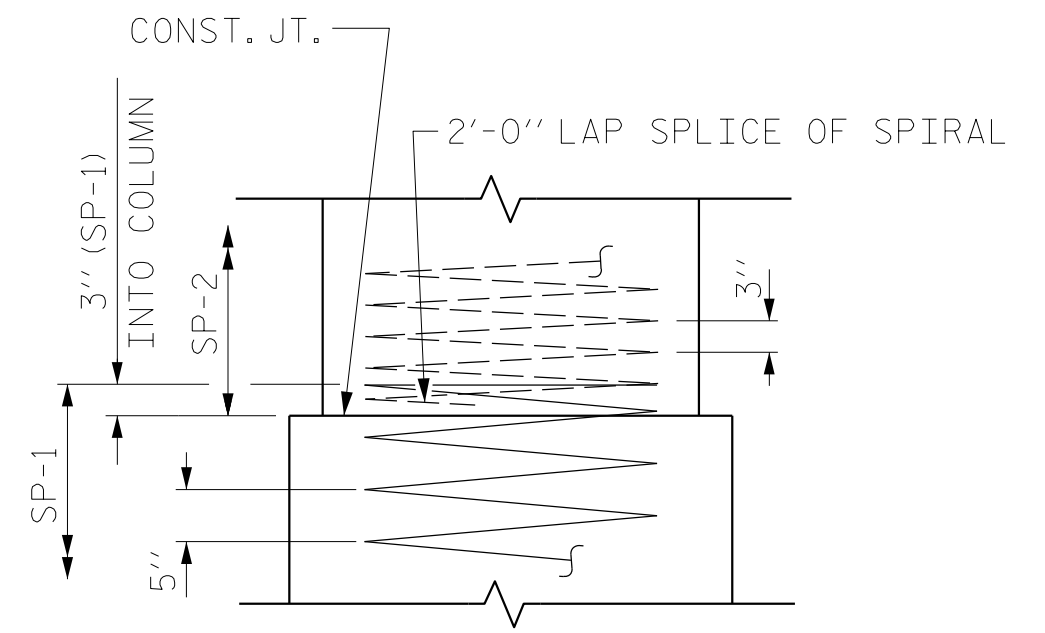
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



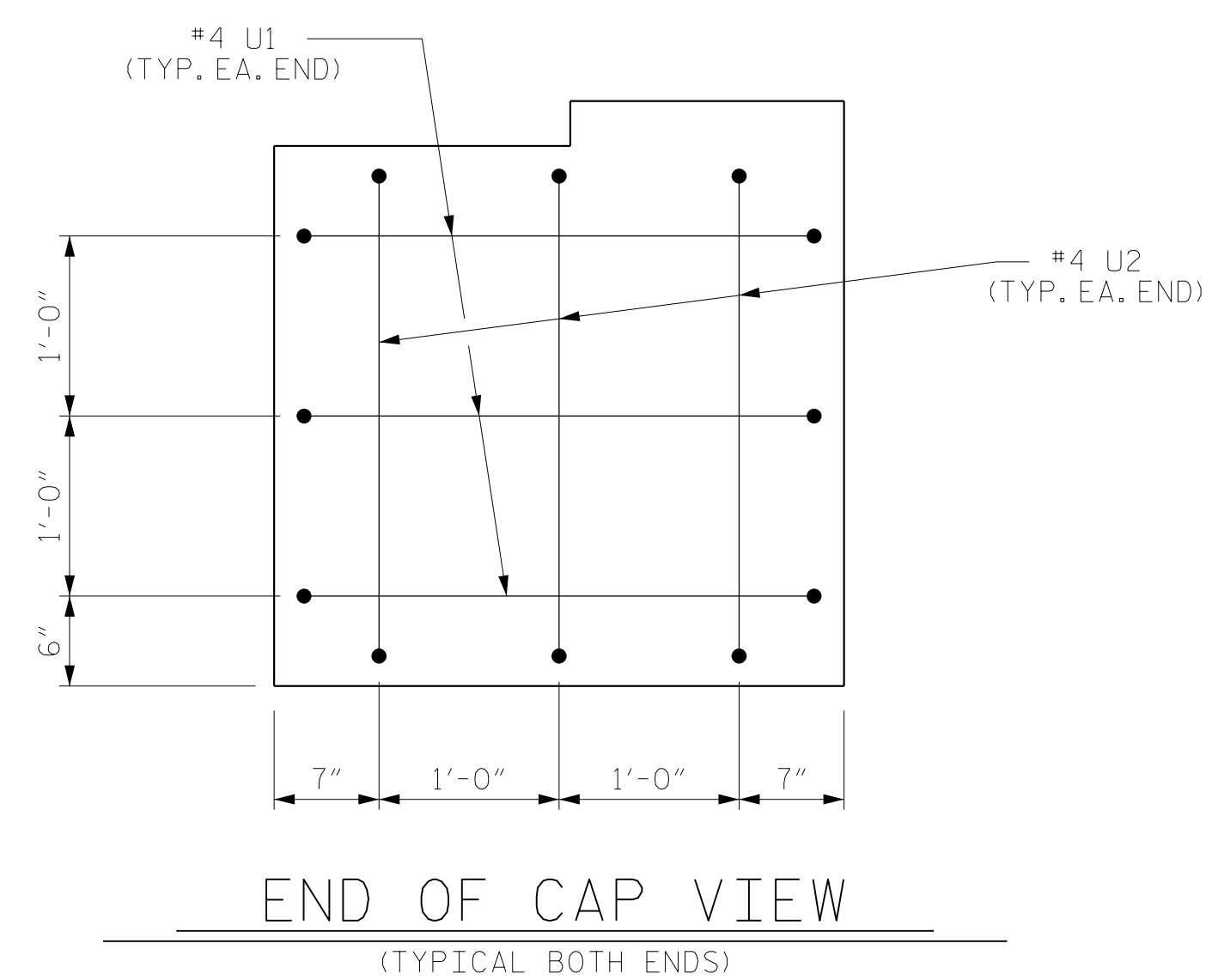
PLAN OF DRILLED PIERS & COLUMNS



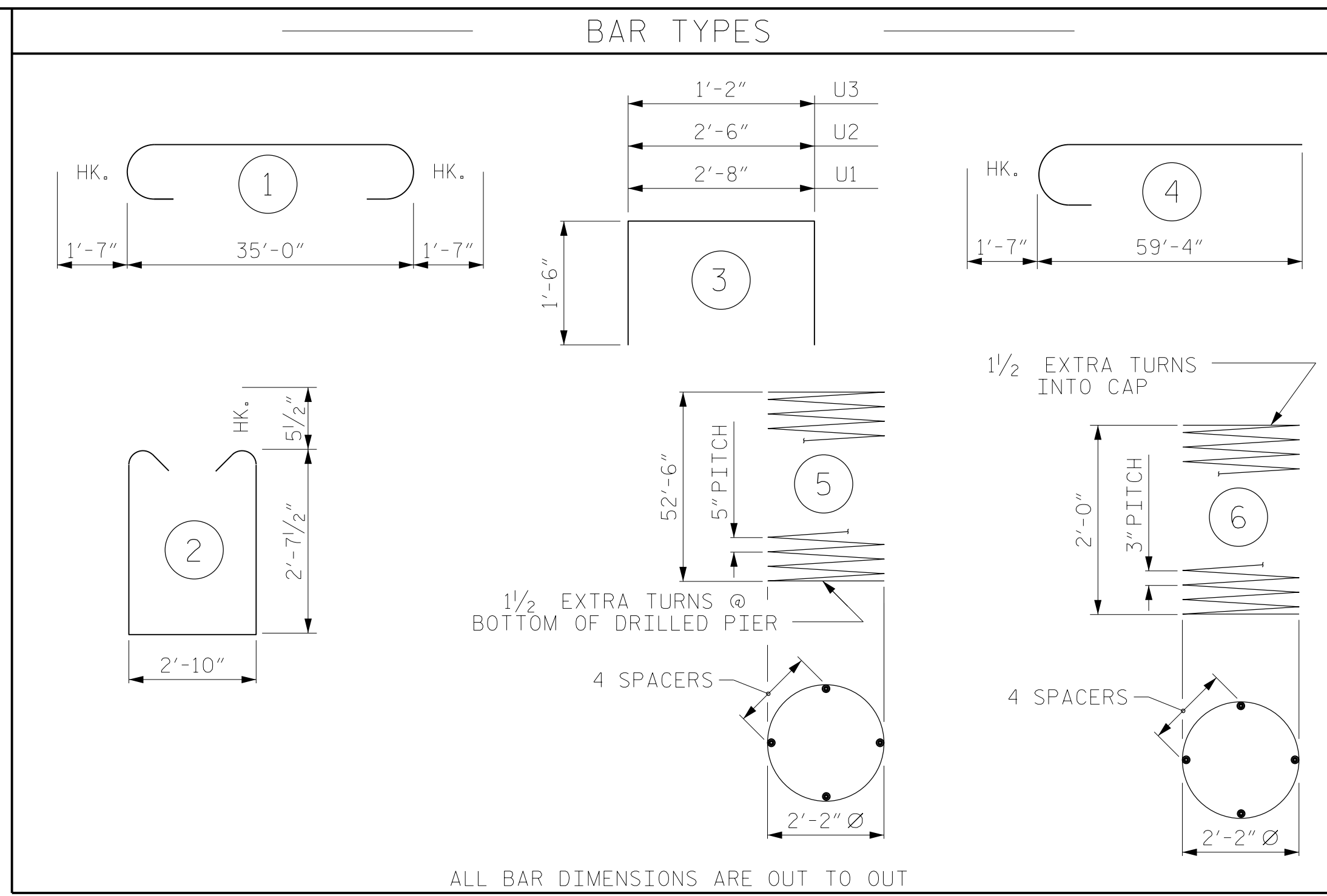
END ELEVATION



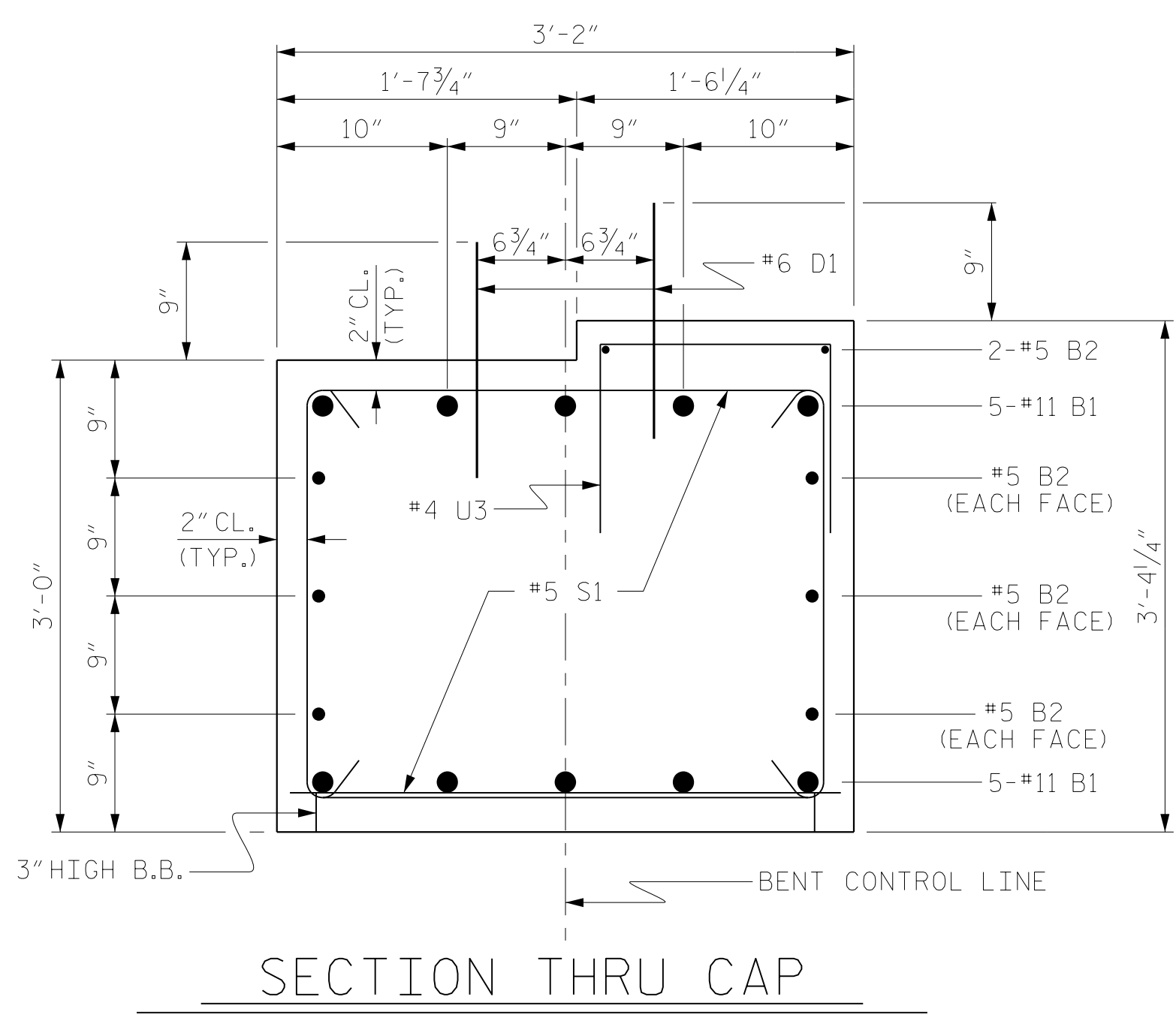
CONSTRUCTION JOINT DETAIL



END OF CAP VIEW
(TYPICAL BOTH ENDS)



ALL BAR DIMENSIONS ARE OUT TO OUT



SECTION THRU CAP

BILL OF MATERIAL FOR ONE BENT					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	10	#11	1	38'-2"	2028
B2	8	#5	STR	35'-2"	293
D1	44	#6	STR	1'-6"	99
M1	30	#11	4	60'-11"	9710
S1	60	#5	2	9'-0"	563
U1	6	#4	3	5'-8"	23
U2	6	#4	3	5'-6"	22
U3	35	#4	3	4'-2"	97
REINFORCING STEEL (FOR ONE BENT)					12835 LBS.
SP-1	3	*	5	846'-8"	2649
SP-2	3	**	6	63'-1"	126
SPIRAL COLUMN REINFORCING STEEL (FOR ONE BENT)					2775 LBS.
* THE SP-1 SPIRAL REINFORCING STEEL SHALL BE W31 OR D-31 COLD DRAWN WIRE OR #5 PLAIN OR DEFORMED BAR					
THE SP-2 SPIRAL REINFORCING STEEL SHALL BE W20 OR D-20 COLD DRAWN WIRE OR #4 PLAIN OR DEFORMED BAR					

CLASS A CONCRETE BREAKDOWN (FOR ONE BENT)	
POUR #2 (COLUMNS)	1.0 C.Y.
POUR #3 (CAP)	13.5 C.Y.
TOTAL CLASS A CONCRETE	14.5 C.Y.

DRILLED PIERS: (FOR ONE BENT)	
DRILLED PIER CONCRETE	
POUR #1 (DRILLED PIERS)	41.6 C.Y.
3'-0" DRILLED PIER NOT IN SOIL	96 LIN. FT.
3'-0" DRILLED PIER IN SOIL	63 LIN. FT.
PERMANENT STEEL CASING FOR 3'-0" DRILLED PIER	45.0 LIN. FT.
Δ CSL TUBES	654 LIN. FT.

Δ THE COST OF CSL TUBES IS INCIDENTAL TO THE UNIT BID PRICE FOR DRILLED PIERS. NO SEPARATE PAYMENT WILL BE MADE FOR CSL TUBES.

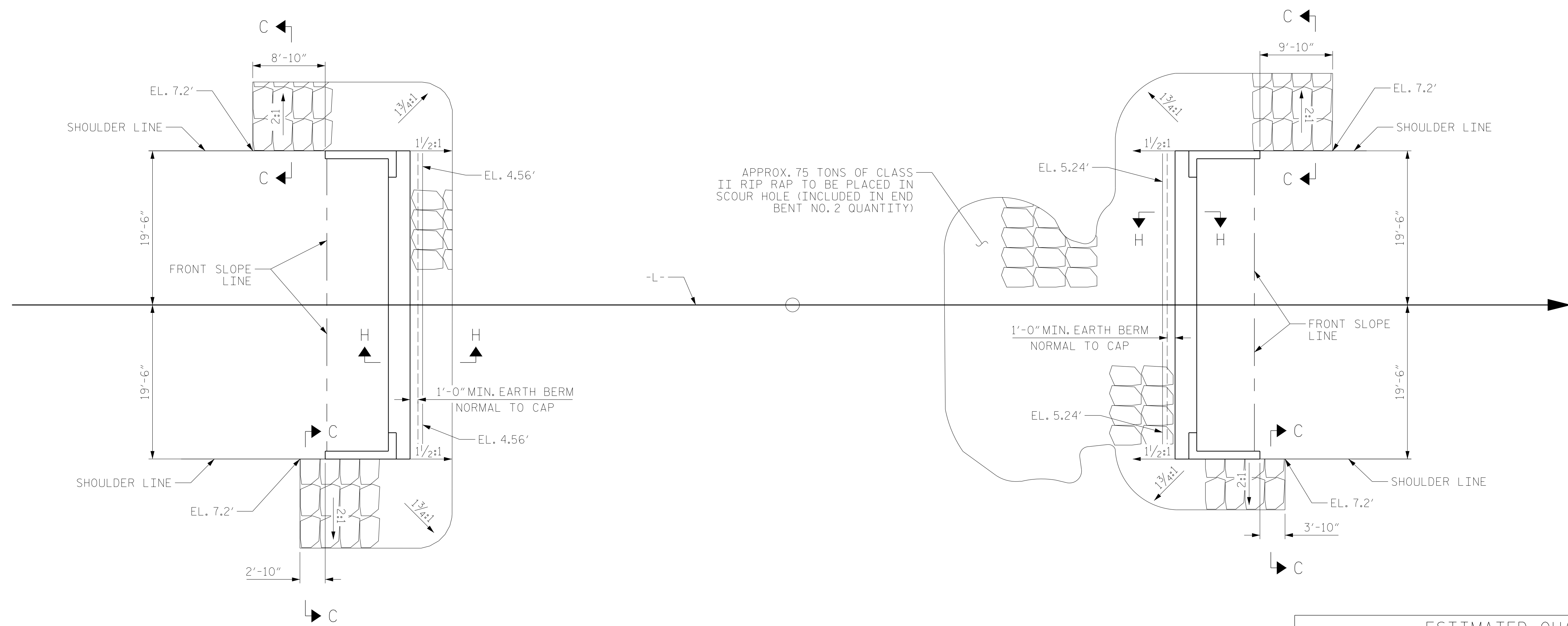
PROJECT NO. 17BP.3.R.55
 ONSLOW COUNTY
 STATION: 16+65.00 -L-
 SHEET 2 OF 2



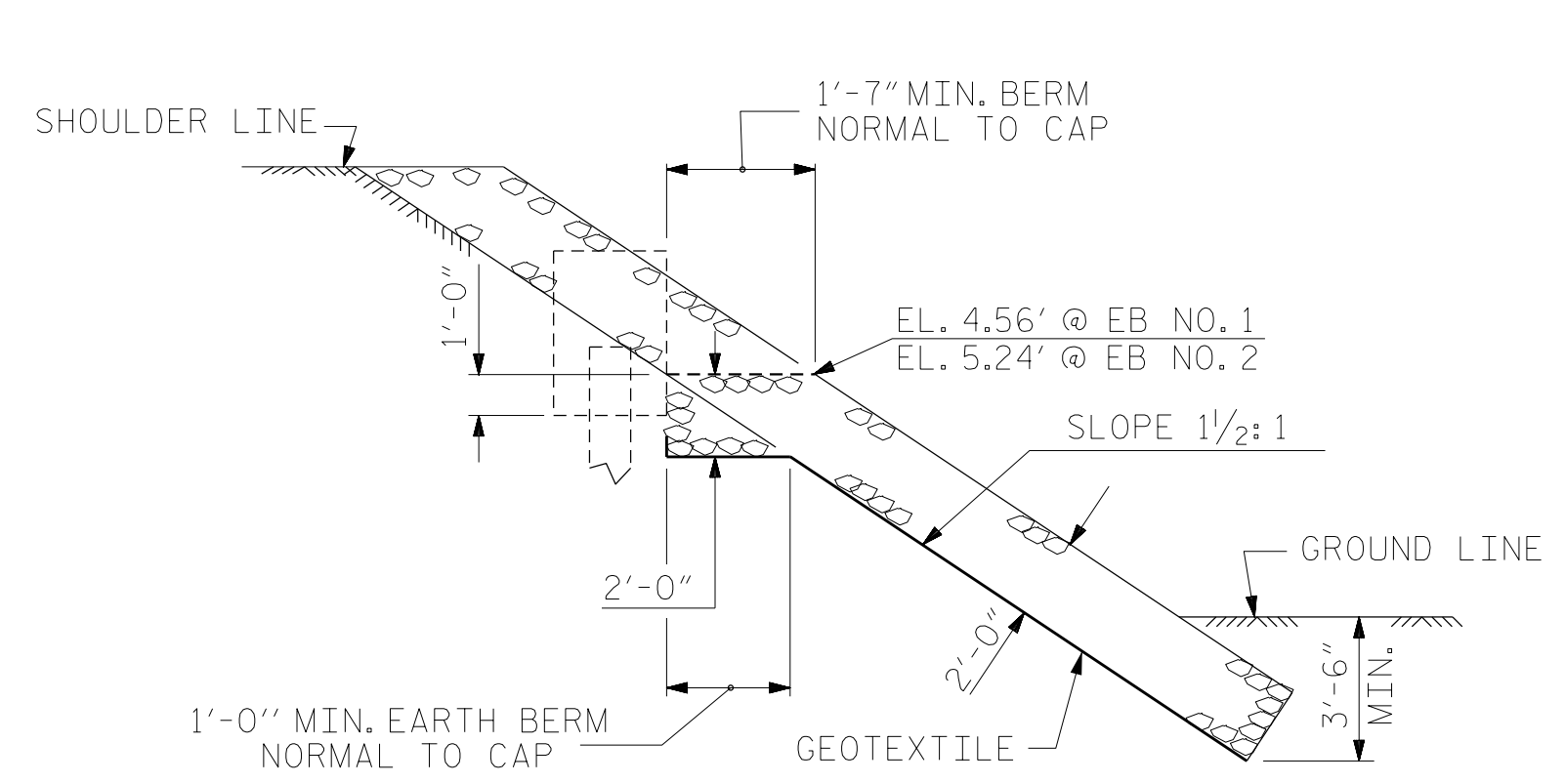
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-17
1			3			TOTAL SHEETS
2			4			20

ASSEMBLED BY : PDS	DATE : 09/2017
CHECKED BY : TLC	DATE : 09/2017
DRAWN BY : DGE 3/10	REV. 11/14
CHECKED BY : MKT 3/10	MAA/TMG

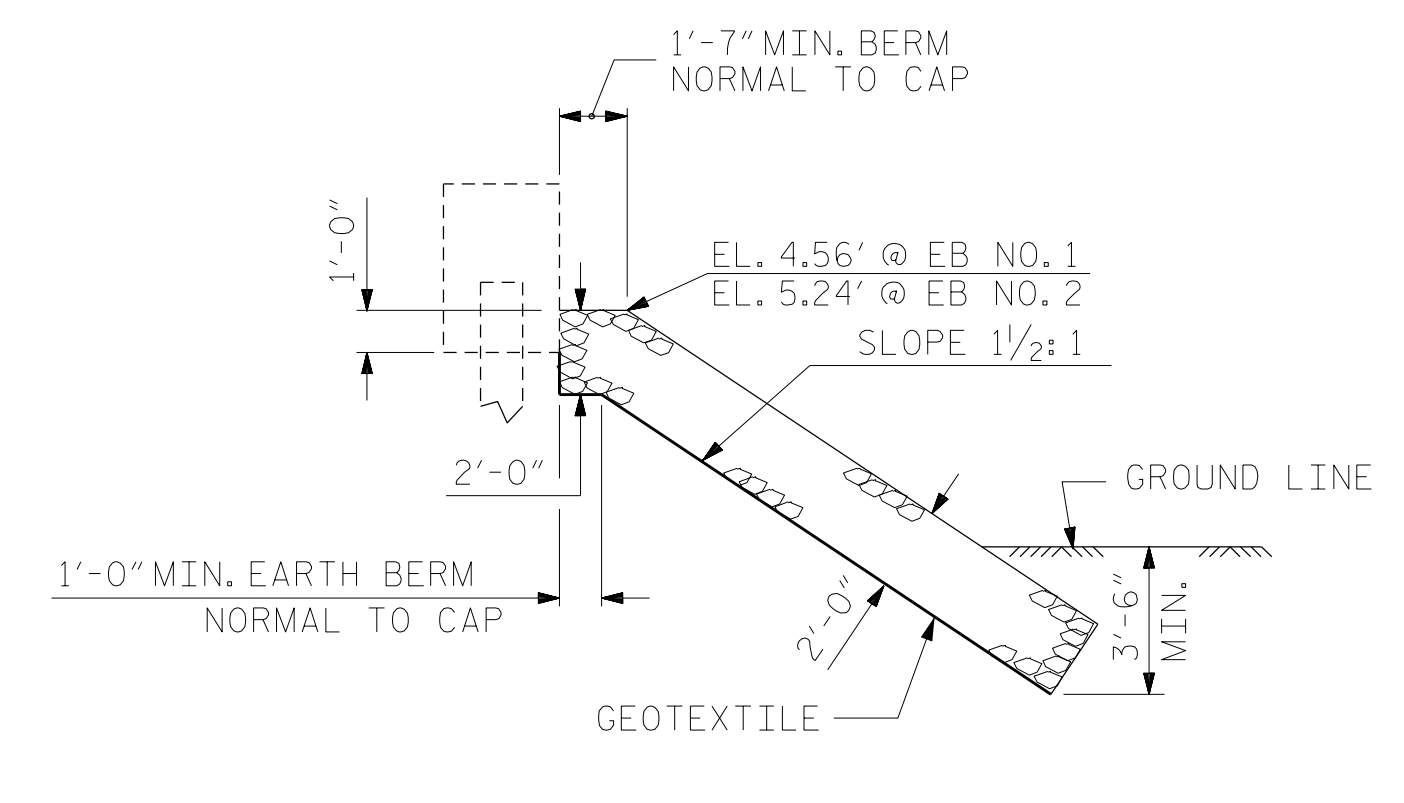
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



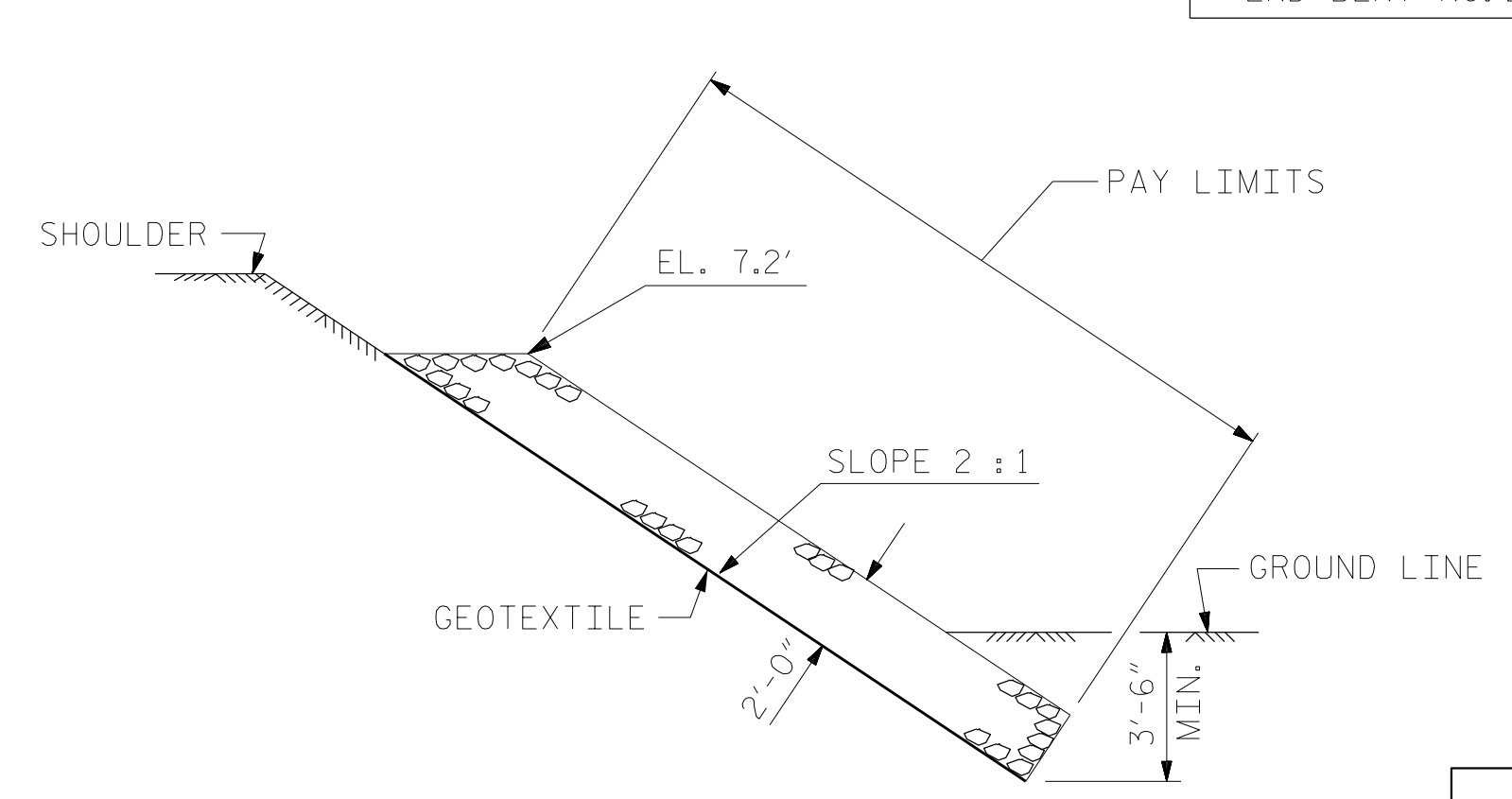
ESTIMATED QUANTITIES		
BRIDGE @ STA. 16+65.00 -L-	RIP RAP CLASS II (2'-0" THICK)	GEOTEXTILE FOR DRAINAGE
	TONS	SQUARE YARDS
END BENT NO. 1	125	140
END BENT NO. 2	245	190



SECTION H-H

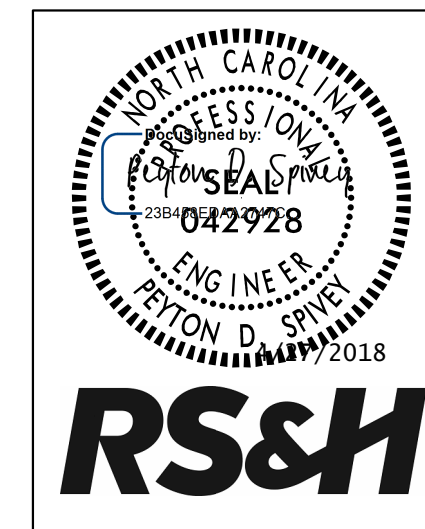


SECTION C-C
BERM RIP RAPPED



SECTION C-C

PROJECT NO. 17BP.3.R.55
 ONSLOW COUNTY
 STATION: 16+65.00 -L-



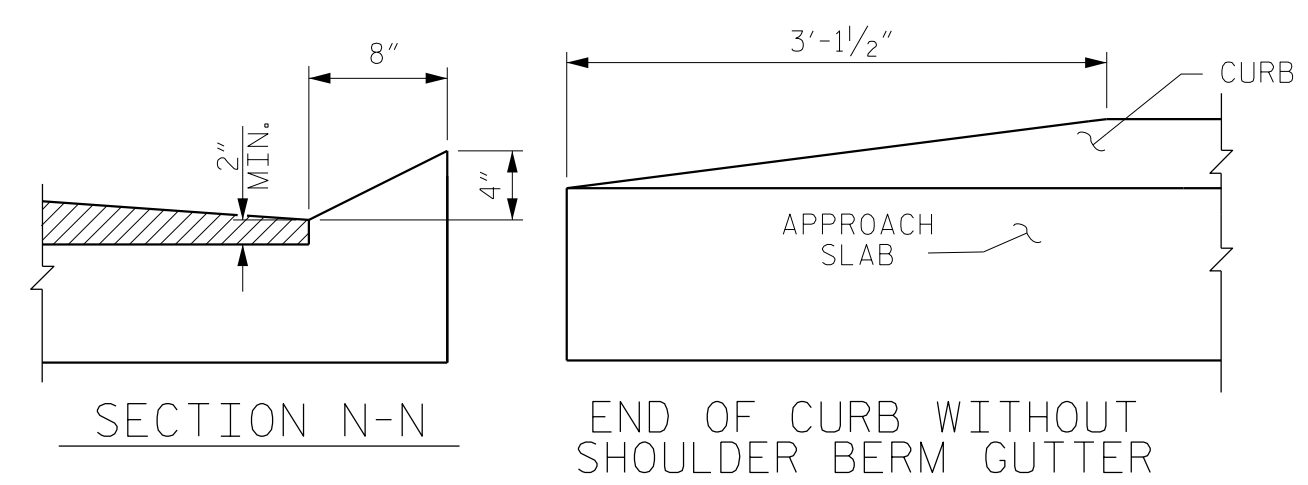
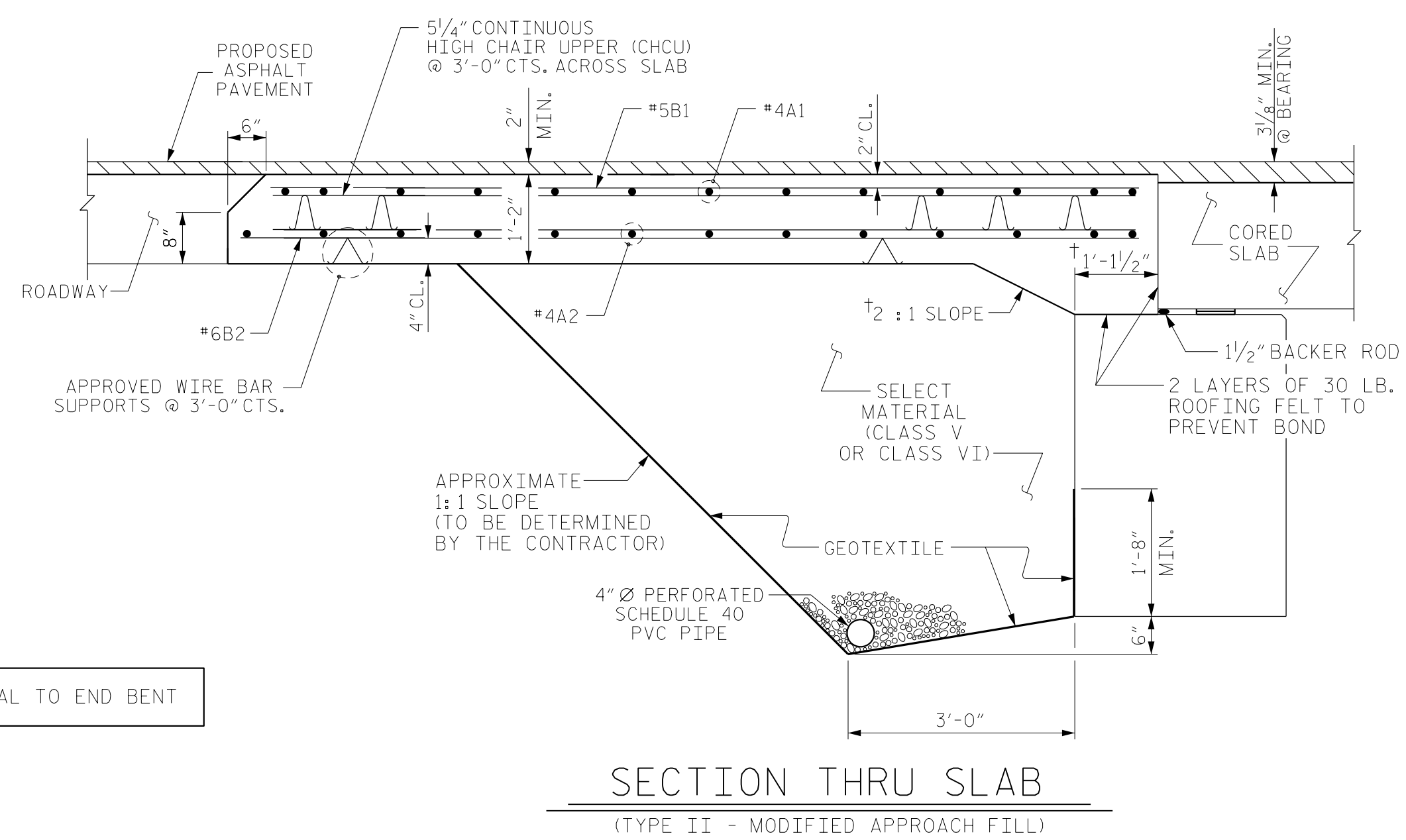
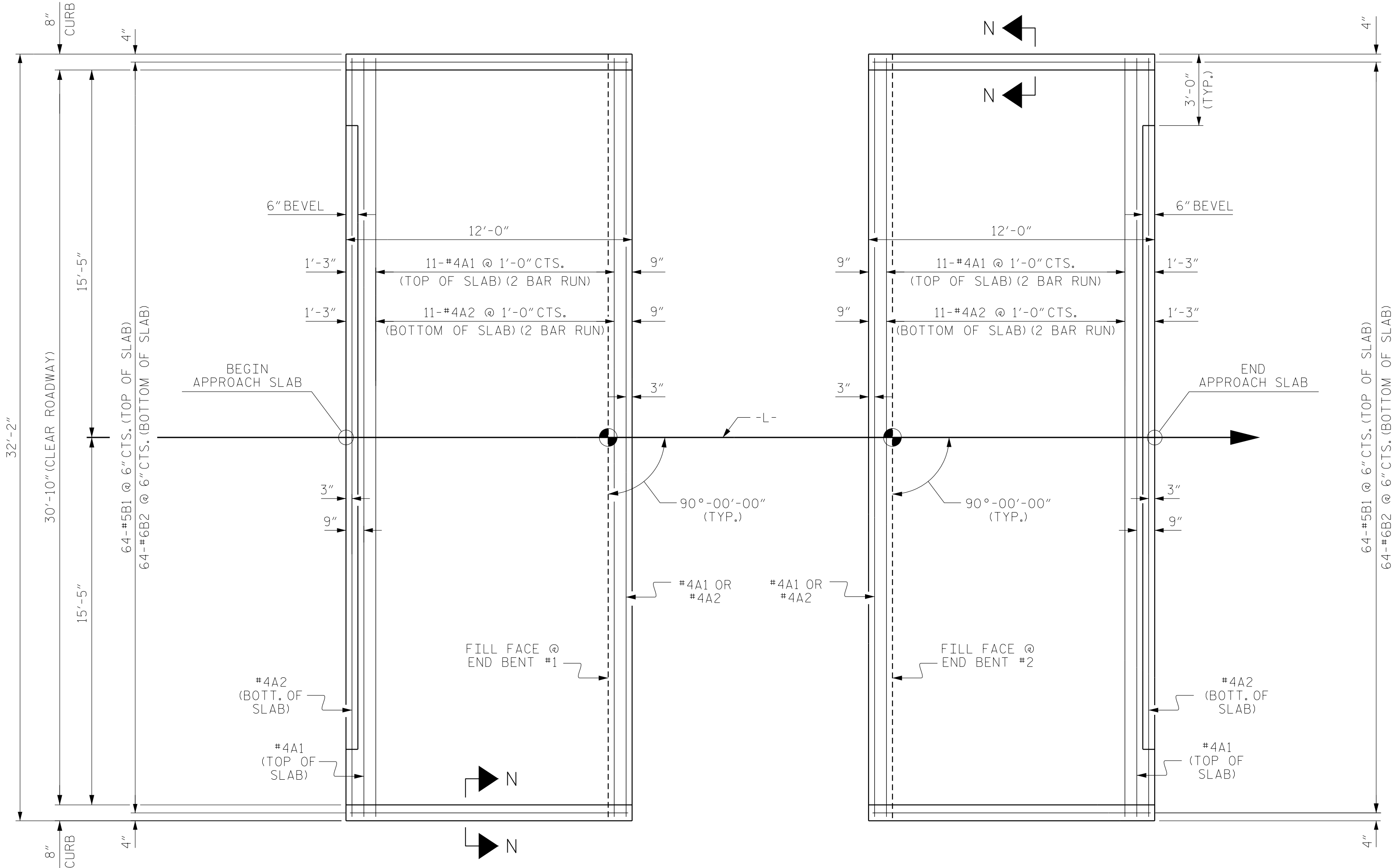
RS&H
 RS&H Architects-Engineers-Planners, Inc.
 8601 Six Forks Road, Suite 260
 Raleigh, NC 27615
 919-926-4100 FAX 919-846-9080
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 North Carolina License No. 00793-F-0403-C-28

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
RIP RAP DETAILS					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

SHEET NO.		S-18
TOTAL SHEETS		20

DRAWN BY : PDS	DATE : 07/2017
CHECKED BY : TLC	DATE : 09/2017
DESIGN ENGINEER OF RECORD: PDS	DATE : 07/2017

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



SPLICE LENGTHS		
BAR SIZE	EPOXY COATED	UNCOATED
#4	2'-0"	1'-9"
#5	2'-6"	2'-2"
#6	3'-10"	2'-7"

NOTES

FOR BRIDGE APPROACH FILL INCLUDING GEOTEXTILE, 4"Ø DRAINAGE PIPE, AND SELECT MATERIAL BACKFILL, SEE ROADWAY PLANS.

GEOTEXTILE SHALL BE TYPE 1 IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS SECTION 1056.

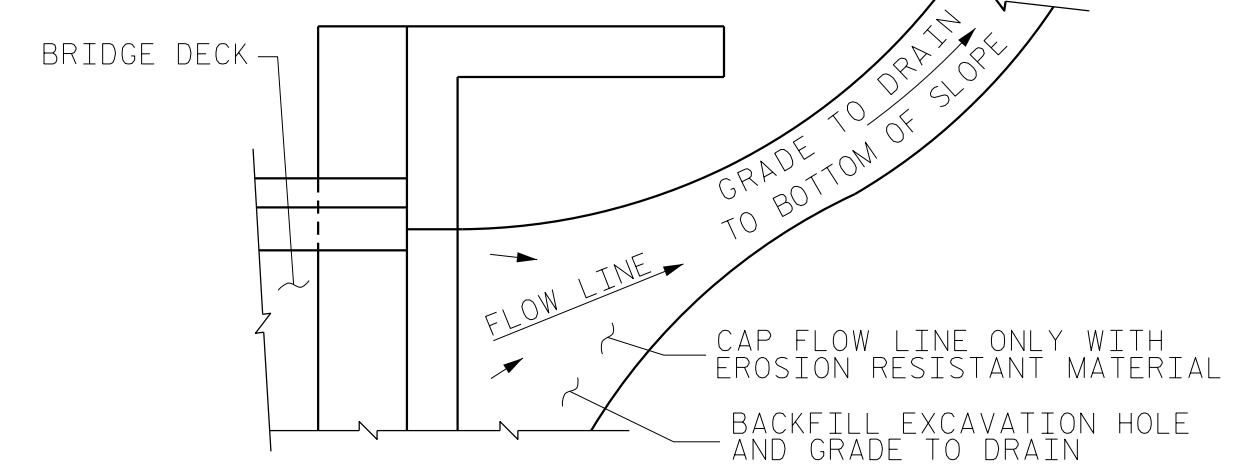
SELECT MATERIAL BACKFILL (CLASS V OR CLASS VI) SHALL BE IN ACCORDANCE WITH STANDARD SPECIFICATIONS SECTION 1016.

SELECT MATERIAL BACKFILL IS TO BE CONTINUOUS ALONG FILL FACE OF BACKWALL FROM OUTSIDE EDGE TO OUTSIDE EDGE OF APPROACH SLAB.

AREA BETWEEN THE WINGWALL AND APPROACH SLAB SHALL BE GRADED TO DRAIN THE WATER AWAY FROM THE FILL FACE OF THE BRIDGE AND SHALL BE PAVED. SEE ROADWAY PLANS.

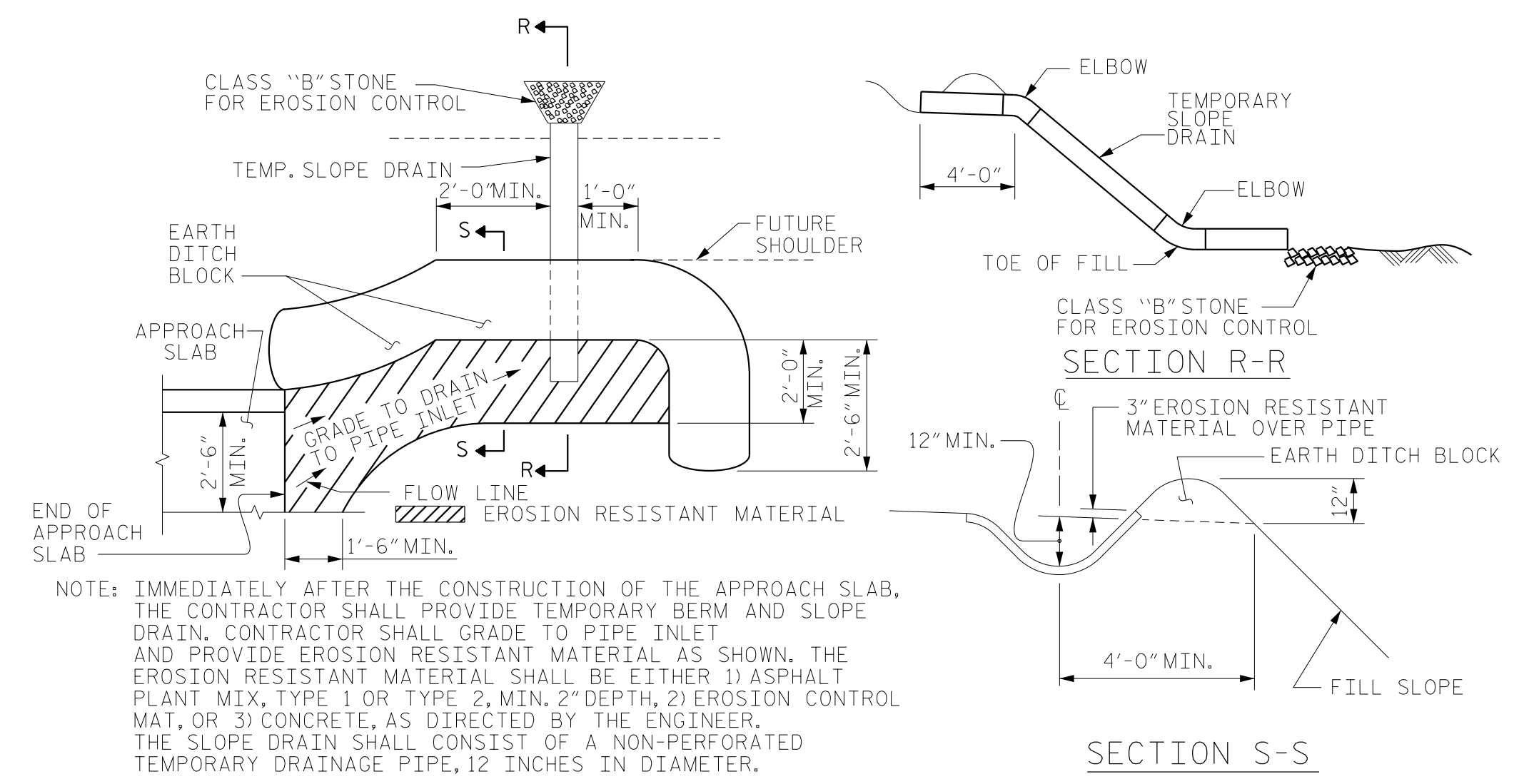
FOR THE 4"Ø DRAINAGE PIPE OUTLET(S), SEE ROADWAY STANDARD DRAWINGS.

APPROACH SLAB GROOVING IS NOT REQUIRED.



NOTE: IF THE APPROACH SLAB IS NOT CONSTRUCTED IMMEDIATELY AFTER THE BACKFILLING OF THE END BENT EXCAVATION, GRADE TO DRAIN TO THE BOTTOM OF THE SLOPE AND PROVIDE EROSION RESISTANT MATERIAL, SUCH AS FIBERGLASS ROVING OR AS DIRECTED BY THE ENGINEER TO PREVENT SOIL EROSION AND TO PROTECT THE AREA ADJACENT TO THE STRUCTURE. THE CONTRACTOR WILL BE REQUIRED TO REMOVE THESE MATERIALS PRIOR TO CONSTRUCTION OF THE APPROACH SLAB.

TEMPORARY DRAINAGE DETAIL



NOTE: IMMEDIATELY AFTER THE CONSTRUCTION OF THE APPROACH SLAB, THE CONTRACTOR SHALL PROVIDE TEMPORARY BERM AND SLOPE DRAIN. CONTRACTOR SHALL GRADE TO PIPE INLET AND PROVIDE EROSION RESISTANT MATERIAL AS SHOWN. THE EROSION RESISTANT MATERIAL SHALL BE EITHER 1) ASPHALT PLANT MIX, TYPE 1 OR TYPE 2, MIN. 2" DEPTH; 2) EROSION CONTROL MAT, OR 3) CONCRETE, AS DIRECTED BY THE ENGINEER. THE SLOPE DRAIN SHALL CONSIST OF A NON-PERFORATED TEMPORARY DRAINAGE PIPE, 12 INCHES IN DIAMETER.

TEMPORARY BERM AND SLOPE DRAIN DETAILS

(TO BE USED WHEN SHOULDER BERM GUTTER IS REQUIRED)

PROJECT NO. 17BP.3.R.55
ONslow COUNTY
STATION: 16+65.00 -L-



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD
BRIDGE APPROACH SLAB
FOR PRESTRESSED CONCRETE
CORED SLAB UNIT
(SUB-REGIONAL TIER)
90° SKEW

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-19
1			3			TOTAL SHEETS
2			4			20

ASSEMBLED BY :	PDS	DATE :	07/2017
CHECKED BY :	TLC	DATE :	09/2017
DRAWN BY :	FCJ 6/87	REV. 12/21/11	MAA/GM
CHECKED BY :	EGA 6/87	REV. 6/13	MAA/GM
		REV. 12/17	MAA/THC

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

STANDARD NOTES

DESIGN DATA:

SPECIFICATIONS	- - - - -	A.A.S.H.T.O. (CURRENT)
LIVE LOAD	- - - - -	SEE PLANS
IMPACT ALLOWANCE	- - - - -	SEE A.A.S.H.T.O.
STRESS IN EXTREME FIBER OF STRUCTURAL STEEL - AASHTO M270 GRADE 36	- -	20,000 LBS. PER SQ. IN.
- AASHTO M270 GRADE 50W	- -	27,000 LBS. PER SQ. IN.
- AASHTO M270 GRADE 50	- -	27,000 LBS. PER SQ. IN.
REINFORCING STEEL IN TENSION - GRADE 60	- - -	24,000 LBS. PER SQ. IN.
CONCRETE IN COMPRESSION	- - - - -	1,200 LBS. PER SQ. IN.
CONCRETE IN SHEAR	- - - - -	SEE A.A.S.H.T.O.
STRUCTURAL TIMBER - TREATED OR UNTREATED EXTREME FIBER STRESS	- - -	1,800 LBS. PER SQ. IN.
COMPRESSION PERPENDICULAR TO GRAIN OF TIMBER	- - - - -	375 LBS. PER SQ. IN.
EQUIVALENT FLUID PRESSURE OF EARTH	- - - - -	30 LBS. PER CU. FT. (MINIMUM)

MATERIAL AND WORKMANSHIP:

EXCEPT AS MAY OTHERWISE BE SPECIFIED ON PLANS OR IN THE SPECIAL PROVISIONS, ALL MATERIAL AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH THE 2018 "STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES" OF THE N.C. DEPARTMENT OF TRANSPORTATION.

STEEL SHEET PILING FOR PERMANENT OR TEMPORARY APPLICATIONS SHALL BE HOT ROLLED.

CONCRETE:

UNLESS OTHERWISE REQUIRED ON PLANS, CLASS A CONCRETE SHALL BE USED FOR ALL PORTIONS OF ALL STRUCTURES WITH THE EXCEPTION THAT: CLASS AA CONCRETE SHALL BE USED IN BRIDGE SUPERSTRUCTURES, ABUTMENT BACKWALLS, AND APPROACH SLABS; AND CLASS B CONCRETE SHALL BE USED FOR SLOPE PROTECTION AND RIP RAP.

CONCRETE CHAMFERS:

UNLESS OTHERWISE NOTED ON THE PLANS, ALL EXPOSED CORNERS ON STRUCTURES SHALL BE CHAMFERED $\frac{3}{4}$ " WITH THE FOLLOWING EXCEPTIONS: TOP CORNERS OF CURBS MAY BE ROUNDED TO $1\frac{1}{2}$ " RADIUS WHICH IS BUILT INTO CURB FORMS; CORNERS OF TRANSVERSE FLOOR EXPANSION JOINTS SHALL BE ROUNDED WITH A $\frac{1}{4}$ " FINISHING TOOL UNLESS OTHERWISE REQUIRED ON PLANS; AND CORNERS OF EXPANSION JOINTS IN THE ROADWAY FACES AND TOPS OF CURBS AND SIDEWALKS SHALL BE ROUNDED TO A $\frac{1}{4}$ " RADIUS WITH A FINISHING STONE OR TOOL UNLESS OTHERWISE REQUIRED ON PLANS.

DOWELS:

DOWELS WHEN INDICATED ON PLANS AS FOR CULVERT EXTENSIONS, SHALL BE EMBEDDED AT LEAST 12" INTO THE OLD CONCRETE AND GROUTED INTO PLACE WITH 1:2 CEMENT MORTAR.

ALLOWANCE FOR DEAD LOAD DEFLECTION, SETTLEMENT, ETC. IN CASTING SUPERSTRUCTURES:

BRIDGES SHALL BE BUILT ON THE GRADE OR VERTICAL CURVE SHOWN ON PLANS. SLABS, CURBS AND PARAPETS SHALL CONFORM TO THE GRADE OR CURVE.

ALL DIMENSIONS WHICH ARE GIVEN IN SECTION AND ARE AFFECTED BY DEAD LOAD DEFLECTIONS ARE DIMENSIONS AT CENTER LINE OF BEARING UNLESS OTHERWISE NOTED ON PLANS. IN SETTING FORMS FOR STEEL BEAM BRIDGES AND PRESTRESSED CONCRETE GIRDER BRIDGES, ADJUSTMENTS SHALL BE MADE DUE TO THE DEAD LOAD DEFLECTIONS FOR THE ELEVATIONS SHOWN. WHERE BLOCKS ARE SHOWN OVER BEAMS FOR BUILDING UP TO THE SLAB, THE VERTICAL DIMENSIONS OF THE BLOCKS SHALL BE ADJUSTED BETWEEN BEARINGS TO COMPENSATE FOR DEAD LOAD DEFLECTIONS, VERTICAL CURVE ORDINATE, AND ACTUAL BEAM CAMBER. WHERE BOTTOM OF SLAB IS IN LINE WITH BOTTOM OF TOP FLANGES, DEPTH OF SLAB BETWEEN BEARINGS SHALL BE ADJUSTED TO COMPENSATE FOR DEAD LOAD DEFLECTION, VERTICAL CURVE ORDINATE, AND ACTUAL BEAM CAMBER.

IN SETTING FALSEWORK AND FORMS FOR REINFORCED CONCRETE SPANS, AN ALLOWANCE SHALL BE MADE FOR DEAD LOAD DEFLECTIONS, SETTLEMENT OF FALSEWORK, AND PERMANENT CAMBER WHICH SHALL BE PROVIDED FOR IN ADDITION TO THE ELEVATIONS SHOWN. AFTER REMOVAL OF THE FALSEWORK, THE FINISHED STRUCTURES SHALL CONFORM TO THE PROFILE AND ELEVATIONS SHOWN ON THE PLANS AND CONSTRUCTION ELEVATIONS FURNISHED BY THE ENGINEER.

DETAILED DRAWINGS FOR FALSEWORK OR FORMS FOR BRIDGE SUPERSTRUCTURE AND ANY STRUCTURE OR PARTS OF A STRUCTURE AS NOTED ON THE PLANS SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL BEFORE CONSTRUCTION OF THE FALSEWORK OR FORMS IS STARTED.

REINFORCING STEEL:

ALL REINFORCING STEEL SHALL BE DEFORMED. DIMENSIONS RELATIVE TO PLACEMENT OF REINFORCING ARE TO CENTERS OF BARS UNLESS OTHERWISE INDICATED IN THE PLANS. DIMENSIONS ON BAR DETAILS ARE TO CENTERS OF BARS OR ARE OUT TO OUT AS INDICATED ON PLANS.

WIRE BAR SUPPORTS SHALL BE PROVIDED FOR REINFORCING STEEL WHERE INDICATED ON THE PLANS. WHEN BAR SUPPORT PIECES ARE PLACED IN CONTINUOUS LINES, THEY SHALL BE SO PLACED THAT THE ENDS OF THE SUPPORTING WIRES SHALL BE LAPPED TO LOCK LEGS ON ADJOINING PIECES.

STRUCTURAL STEEL:

AT THE CONTRACTOR'S OPTION, HE MAY SUBSTITUTE $\frac{7}{8}$ " \emptyset SHEAR STUDS FOR THE $\frac{3}{4}$ " \emptyset STUDS SPECIFIED ON THE PLANS. THIS SUBSTITUTION SHALL BE MADE AT THE RATE OF 3 - $\frac{7}{8}$ " \emptyset STUDS FOR 4 - $\frac{3}{4}$ " \emptyset STUDS, AND STUD SPACING CHANGES SHALL BE MADE AS NECESSARY TO PROVIDE THE SAME EQUIVALENT NUMBER OF $\frac{7}{8}$ " \emptyset STUDS ALONG THE BEAM AS SHOWN FOR $\frac{3}{4}$ " \emptyset STUDS BASED ON THE RATIO OF 3 - $\frac{7}{8}$ " \emptyset STUDS FOR 4 - $\frac{3}{4}$ " \emptyset STUDS. STUDS OF THE LENGTH SPECIFIED ON THE PLANS MUST BE PROVIDED. THE MAXIMUM SPACING SHALL BE 2'-0".

EXCEPT AT THE INTERIOR SUPPORTS OF CONTINUOUS BEAMS WHERE THE COVER PLATE IS IN CONTACT WITH BEARING PLATE, THE CONTRACTOR MAY, AT HIS OPTION, SUBSTITUTE FOR THE COVER PLATES DESIGNATED ON THE PLANS COVER PLATES OF THE EQUIVALENT AREA PROVIDED THESE PLATES ARE AT LEAST $\frac{3}{16}$ " IN THICKNESS AND DO NOT EXCEED A WIDTH EQUAL TO THE FLANGE WIDTH LESS 2" OR A THICKNESS EQUAL TO 2 TIMES THE FLANGE THICKNESS. THE SIZE OF FILLET WELDS SHALL CONFORM TO THE REQUIREMENTS OF THE CURRENT ANSI/AASHTO/AWS "BRIDGE WELDING CODE". ELECTROSLAG WELDING WILL NOT BE PERMITTED.

WITH THE SOLE EXCEPTION OF EDGES AT SURFACES WHICH BEAR ON OTHER SURFACES, ALL SHARP EDGES AND ENDS OF SHAPES AND PLATES SHALL BE SLIGHTLY ROUNDED BY SUITABLE MEANS TO A RADIUS OF APPROXIMATELY $\frac{1}{16}$ " INCH OR EQUIVALENT FLAT SURFACE AT A SUITABLE ANGLE PRIOR TO PAINTING, GALVANIZING, OR METALLIZING.

HANDRAILS AND POSTS:

METAL STANDARDS AND FACES OF THE CONCRETE END POSTS FOR THE METAL RAIL SHALL BE SET NORMAL TO THE GRADE OF THE CURB, UNLESS OTHERWISE SHOWN ON PLANS. THE METAL RAIL AND TOPS OF CONCRETE POSTS USED WITH THE ALUMINUM RAIL SHALL BE BUILT PARALLEL TO THE GRADE OF THE CURB.

METAL HANDRAILS SHALL BE IN ACCORDANCE WITH THE PLANS. RAILS SHALL BE AS MANUFACTURED FOR BRIDGE RAILING. CASTINGS SHALL BE OF A UNIFORM APPEARANCE. FINIS AND OTHER DEFORMATIONS RESULTING FROM CASTING OR OTHERWISE SHALL BE REMOVED IN A MANNER SO THAT A UNIFORM COLORING OF THE COMPLETED CASTING SHALL BE OBTAINED. CASTINGS WITH DISCOLORATIONS OR OF NON-UNIFORM COLORING WILL NOT BE ACCEPTED. CERTIFIED MILL REPORTS ARE REQUIRED FOR METAL RAILS AND POSTS.

SPECIAL NOTES:

GENERALLY, IN CASE OF DISCREPANCY, THIS STANDARD SHEET OF NOTES SHALL GOVERN OVER THE SPECIFICATIONS, BUT THE REMAINDER OF THE PLANS SHALL GOVERN OVER NOTES HEREON, AND SPECIAL PROVISIONS SHALL GOVERN OVER ALL. SEE SPECIFICATIONS ARTICLE 105-4.

ENGLISH

JANUARY, 1990

STD. NO. SN